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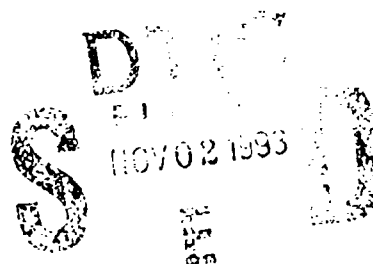


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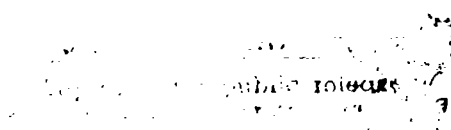
Army Contractor and Civilian Maintenance, Supply, and Transportation Support During Operations Desert Shield and Desert Storm

Volume 1: Study Report

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Executive Summary

ARMY CONTRACTOR AND CIVILIAN MAINTENANCE, SUPPLY, AND TRANSPORTATION SUPPORT DURING OPERATIONS DESERT SHIELD AND DESERT STORM

Volume 1: Study Report

The contributions made by Department of Defense (DoD) contractors to the success of the United States Department of the Army (DA) mission in Operations Desert Shield and Desert Storm were not well documented in the literature about that conflict. To construct a record of contractor support provided in the Persian Gulf theater during those operations, the Army Deputy Chief of Staff for Logistics commissioned this study. This study records the extent and location of contractor maintenance, supply, and transportation support; it identifies who the defense contractors were, what they did, when they did it, and the locations on the battlefield where they provided support. We make similar determinations for the DA civilians (DACs) in the theater of operations, (to the extent such information was available).

We positively identified 76 U.S. contractors that contributed to the effort, employing a total of 998 people. The support they provided was almost entirely in the areas of maintenance, technical assistance, equipment deprocessing, and equipment fielding. We also positively identified 22 major foreign contractors, employing over 2,900 people. Their support was almost entirely in the form of drivers, trucks, and buses. Neither the U.S. nor the foreign contractors provided any significant amount of supply support.

Contractor support began almost at the same time the first U.S. forces deployed to Southwest Asia. Contractor support reached full strength by mid-January 1991, just prior to the start of the air campaign. Few U.S. contractors were located with the forward deployed Army elements. Although some contractors performed their work with the Corps and Division support organizations, about 80 percent of them operated in the rear areas at locations such as the Theater Army Maintenance Program at Abu Dhabi, United Arab Emirates, and Dhahran, Saudi Arabia. Personnel were routinely deployed on a temporary basis from both the rear areas and military unit

locations to sites requiring assistance. A number operated independently as contact teams, covering almost the entire theater of operations. Their efforts ranged from single individuals employed as contractor field service representatives to organizations with scores of people.

Foreign contractor personnel operated primarily on the lines of communications, and transported personnel and materiel between the rear areas and the log bases. Some of the foreign contractors employed hundreds of people.

As in the case of U.S. contractors, the DA civilian support began almost at the same time as the first U.S. troops were deployed. Seven hundred seventy DACs were assigned to the theater to complete a specific task in support of the forces. Most of those civilians came from the Army Materiel Command's subordinate organizations. They performed functions in the areas of maintenance, supply, technical assistance, equipment modification, and the like: skills not routinely found in the military support units (e.g., depot maintenance and equipment fielding). Although they made major contributions to sustaining the force and their accomplishments were highly regarded, our study does not address the efforts of the Logistics Assistance Representatives (LARs) because they are normally stationed with the combat units and routinely accompany them during deployments.

Little evidence indicated that many contractor employees crossed over into Iraq or Kuwait with the combat elements. In total, 34 personnel from 10 contractor organizations accompanied Army forces into Iraq/Kuwait. The duration of the contractors' stay with the Army forces coincided with the duration of Operation Desert Storm; it was just over 3 days. Other than the LARs who routinely accompanied their assigned units, we identified no DACs who crossed the border with Army forces.

Senior logisticians whom we interviewed were almost unanimous in their observations that the contractors performed an essential and vital role on the battlefield especially in supporting the high-tech weapon systems. Many observed that in future conflicts, greater use of contractors and DACs can be expected; however, their roles would be undertaken primarily in the rear areas.

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STUDY REPORT

CHAPTER 1

INTRODUCTION

BACKGROUND

This report documents the maintenance, supply, and transportation support that U.S. and foreign contractors and Department of Army civilians (DACs) provided to the U.S. Army in the Southwest Asia (SWA) theater of operations during Operation Desert Shield/Storm (ODS/S). It addresses the four logistical phases¹ that occurred during ODS/S: Initial, Alpha, Bravo, and Charlie. Logistics Assistance Representatives (LARs) are not included in the DAC figures because they are an ongoing integral part of the operational units with which they deployed. The report answers four questions posed by the Deputy Chief of Staff (Logistics) (U.S. Army) (DCSLOG):

- Where were they?
- Who were they?
- What did they do?
- When did they do it?

Volume 1 of this report, *Study Report*, is organized into three chapters and seven appendices. This chapter provides an introduction to the study. Chapter 2 provides an overview of the study results. Chapter 3 identifies who the contractors and DACs were, where they were located by the four major logistical phases of the operation, and the functions that they performed. It also provides the detailed data associated with our findings concerning the contractor and DAC contributions to logistics support of the ODS/S theater of operations.

¹The phases Alpha, Bravo, and Charlie are the logistics phases identified in the 22D Support Command's Operations Plans (OPLANs). The term "Initial" was created for use in this report to describe that period between 8 August 1990 and 31 October 1990. While they do not exactly match the tactical phases, they were selected to provide several benchmarks to assist in measuring the buildup of the contractor and DAC personnel.

This study's scope, parameters, methodology, research thresholds, and study limitations are detailed in Appendix A. We interviewed key Army personnel who served in the theater of operations. A substantial number of documents were reviewed. They are listed in Appendix B. Appendix C summarizes the contractors by AMC major subordinate commands and other contracting offices, by phase. Appendix D, "Contractors and Department of the Army Civilians by Location;" Appendix E "Personnel by Location;" Appendix F, "Weapon Systems and End Items Supported;" and Volume 2, *Data Detail and Summaries*, all provide the reader with an even greater level of detail than is presented in Chapters 1 through 3. References to these appendices are not specifically called out in the main discussion of each phase, but the reader should be aware of their existence. The subject areas addressed in Appendices D, E, and F and Volume 2 are marked by an "X" in Table 1-1. We obtained significant information from our interviews, literature search, and questionnaires that went beyond the original scope of the study; that information is presented as "Observations" in Appendix G as a service to our sponsor.

TABLE 1-1
APPENDICES D, E, F, AND VOLUME 2 SUBJECT AREAS

Subject area	Appendix D	Appendix E	Appendix F	Volume 2
Locations	X	X		X
Contractors	X			X
Functions performed	X			X
Permanent personnel	X	X		X
Temporary personnel	X			X
Weapon system/end item			X	X
Other				X

We address Army-related events in SWA during the period from 8 August 1990 through 28 February 1991. Included in the discussion are Army actions taken during the massive logistical buildup in SWA, the air war, and the ground war. We do not address activity taking place before 8 August 1990 or any other actions taken subsequent to 28 February 1991, since those periods were outside of our study charter.

We categorize the information gathered according to the four major logistical phases of the war, as defined by the 22nd Support Command, to permit a comparison

of the buildup of contractor and DAC support over the course of the war. The four phases, their titles, and their dates are as follows:

- **INITIAL:** Early Deployment – 8 August through 31 October 1990
- **ALPHA:** Preparation and Positioning – 1 November 1990 through 15 January 1991
- **BRAVO:** Movement of the Corps – 16 January 1991 through 22 February 1991
- **CHARLIE:** Ground Offensive – 23 February through 28 February 1991.

Key terms used in this report are as follows:

- **Contractor:** Each U.S. or foreign company providing support under a separate contract number. Under this definition, contractor X who provided support under contract numbers DXXX-90-0001 and DXXX-90-0002 was counted twice.
- **U.S. contractors:** Companies based in the United States.
- **Foreign contractors:** Companies not based in the United States or those employing non-U.S. companies to provide their support in theater. Four U.S. contractors were in this latter category. Each contractor let subcontracts to Saudi Arabian companies to provide the in-theater transportation support that was a portion of their overall contract with the U.S. Government.
- **Fixed locations:** Established geographical locations from which support was provided such as Dhahran, Saudi Arabia (SA). For ODS/S, fixed locations are generally thought of as echelons-above-corps (EAC) locations. In cases where the fixed location could not be identified, the location was listed as "in theater."
- **Organizational locations:** The operational units with which contractor and DAC personnel were permanently stationed and to which they provided support. In cases where the organizational location could not be specified, the location was listed as "other."
- **Rear area:** Geographical area encompassing a network of roads used to transport materiel and people between fixed locations and organizational locations.
- **Functional areas:** The types of support provided by contractors and DACs in the areas of maintenance, supply, and transportation.

- *Permanent personnel:* Personnel permanently located and working at a fixed or organizational location or rear area to provide support during a phase.
- *Temporary personnel:* Personnel who visited a fixed or organizational location during a phase to provide support. Examples are contractor field service representatives and contact teams. The frequency and duration of each visit varied depending upon the support requirement.

Our findings concerning U.S. contractor costs are discussed in Volume 2. The data that are available concerning costs are often inconsistent and are not easily compared. Further, these data cannot be readily associated with a particular logistic phase.

Volume 2 of this report, *Data Detail and Summaries*, contains the supporting information and data base detail concerning our findings; it is published separately.

The discussion that follows, categorized by logistic phase, includes a description of each phase from both a tactical and logistical perspective; we describe contractor and DAC locations on the battlefield, with supporting maps that represent the period and depict approximate battlefield locations.

CHAPTER 2

HIGHLIGHTS OF CONTRACTOR AND DEPARTMENT OF ARMY CIVILIAN SUPPORT

INTRODUCTION

This chapter, framed in a historical perspective, provides an overview of contractor and DAC support during ODS/S and discusses Army doctrine during wartime.

OVERVIEW OF SUPPORT PROVIDED

Contractor support began almost at the same time the first troops deployed on 8 August 1990. This was due, in part, to the political considerations that limited the number of troops the Commander in Chief (CINC), U.S. Central Command (CENTCOM), could initially deploy into the theater of operations. Because of the uncertainty associated with the threat of invasion by Iraqi forces, the CINC made a deliberate decision to deviate from doctrine and policy and deploy only combat elements. That decision placed a large number of troops in the harsh desert environment without much logistical support of any type. To offset this void, a number of alternative sources of support were adopted, such as local and U.S. contractors. United States contractors were particularly valuable because their personnel did not count against the ceilings placed on the number of deployed troops and they could provide skills not obtainable locally. Additionally, in many instances, U.S. contractors were able to arrange quicker passage to SWA than could their Army active duty personnel counterparts.

Number of Contractors and Department of the Army Civilians

By the time the ground war ended on 28 February 1991, 998 personnel from 76 U.S. contractors had served in the theater. The AMC major subordinate commands (MSCs) contracted for 75 of those contractors – the Aviation and Troop Support Command (ATCOM) providing the largest number (27) and the Army Armament, Munitions and Chemical Command (AMCCOM) providing the smallest (5). The remaining U.S. contractor was provided by Fort Hood. The largest number

of contractors serving during any logistical phase of ODS/S was 71 for the Bravo and Charlie Phase(s), combined.

During these phases, 22 foreign contractors provided support to the U.S. Army. Eighteen of these foreign contractors were Saudi Arabian firms contracted by the in-theater Army Central Command (ARCENT) contracting offices. The remaining four contractors are U.S. contractors that we have counted as foreign contractors because each of them let subcontracts to Saudi Arabian companies for in-theater transportation support, which was a portion of their overall contract with the U.S. Government. The contracting office for these four U.S. companies was the Headquarters, Military Sealift Command (HQ MSC). During the Alpha phase, the largest number of foreign contractors (20) provided support. A complete list of all U.S. contractors is in Table 2-5; all foreign contractors are listed in Table 2-6.

Contractor Support by Functional Area

All but two of the U.S. contractors provided maintenance support during ODS/S. Refer to Table 2-1. That support consisted of organizational location through depot level maintenance, Aviation Unit Maintenance (AVUM) and Aviation Intermediate Maintenance (AVIM), modifications, deprocessing, training, and technical support. Also, over 33 percent of the maintenance contractors provided supply support and almost 8 percent provided transportation support. Supply support consisted of Class III, Class IV, Class VII, and Class IX¹ management, fielding, training, installation, and technical support. Mode and terminal operations were the only transportation areas where support was provided.

For foreign contractors, support focused on transportation, with over 86 percent of all the contractors providing truck drivers, bus drivers, or both. The limited amount of maintenance support provided by foreign contractors was restricted to modifications, training, and technical support; supply support included only repair parts.

The DACs provided maintenance support in the areas of direct support through depot maintenance, deprocessing, modifications, and technical support. Supply

¹Army classes of supply: I - Subsistence, II - Clothing and Textiles, III - Petroleum, Oil, and Lubricants, IV - Fortification and Barrier Items, V - Ammunition, VI - Personal Demand Items, VII - Major Items, VIII - Medical Items, IX - Repair Parts, and X - Nonmilitary Materiel

TABLE 2-1

CONTRACTOR SUPPORT BY FUNCTIONAL AREA

Contractor	Total number of contractors	Maintenance	Supply	Transportation
United States	76	74	25	6
Foreign	22	3	1	19

Note: Numbers are not additive. Some contractors provide more than one type of function, hence, the total number of contractor's figures do not directly reflect the actual sum of the figures from the three functional area category columns.

support was limited to class IX management, fielding, training, and technical support.

Locations Where Support Was Provided

Contractor and DAC support occurred from one of three different locations: fixed, organizational, or rear areas. Fixed refers to support provided from an established geographical location. During ODS/S, fixed locations were identified mostly as locations at echelons above corps level. Organizational locations were military unit locations where contractor personnel were permanently stationed and provided support. For purposes of this report, rear areas are limited to describing the transportation of materiel and people between fixed and organizational locations.

Support was provided from 15 fixed locations. Of those 15 locations, all but 1 were located in SA. The exception was the location of Theater Aviation Maintenance Program (TAMP)-base in Abu Dhabi, United Arab Emirates (UAE). Of the 14 locations in Saudi Arabia, 6 were established by the Army during ODS/S. Those were the logistics bases. The location "Theater Army Area" refers to any fixed location not otherwise covered.

The fixed locations were the following:

Abu Dhabi, UAE
 Ad Dammam, SA
 Al Jubail, SA
 Dhahran, SA
 Hafir Al Batin, SA
 King Fahd AFB, SA

Log base Alpha
 Log base Bravo
 Log base Bastogne
 Log base Charlie
 Log base Echo

King Khalid Military City
(KKMC), SA

Riyadh, SA
Theater Army Area

Additionally, support was provided from 20 major organizational locations. These organizational locations were as follows:

1st Armored Division	24th Infantry Division
1st Cavalry Division	3d Armored Cavalry Regiment
1st Infantry Division	3d Armored Division
11th Air Defense Artillery Brigade	35th Signal Brigade
12th Aviation Brigade	82d Airborne Division
101st Airborne Division	TF 8-43/32d Air Defense Command
124th Military Intelligence Battalion	III Corps Elements
142d Field Artillery Brigade	VII Corps
2d Armored Cavalry Division	XVIII Corps
2d Armored Division	Other Units

Number of Contractor and DAC Personnel During the Ground Offensive (Phase Charlie)

During the ground offensive (i.e., logistical Phase Charlie), the largest number of DACs and contractor personnel (4,664 people) were serving in the theater. The U.S. contractors provided more than 20 percent of this total; DACs more than 16 percent; and foreign contractors provided the remainder, almost 63 percent of the total. The consensus of the senior Army logisticians interviewed was that from a logistics perspective, this was a quartermaster's and transporter's war. Table 2-2 shows that the array of contractor and DAC personnel by the three functional areas is consistent with this view. Over 63 percent of all personnel were involved in the transportation function, provided almost exclusively by bus and truck drivers.

TABLE 2-2

CONTRACTOR AND DAC PERSONNEL, BY SERVICE AREA, PROVIDED DURING PHASE CHARLIE

Personnel	Maintenance	Supply	Transportation	Total
U.S. contractors	795	159	15	969
Foreign contractors	0	0	2,925	2,925
DAC personnel	472	298	0	770
Total	1,267	457	2,940	4,664

A review of the contracts with the foreign contractors indicates that about 30 percent more drivers were contracted for than were actually provided (the contractors were paid only for those they provided). This was due to the frequent inability of the foreign contractors to provide either the bus or truck for the driver.

United States contractor support was divided among the functions of maintenance (82 percent), supply (16.5 percent), and transportation (1.5 percent). Foreign contractor support was almost exclusively in the area of transportation. The DAC operations were split between maintenance (about 60 percent) and supply (about 40 percent).

Of all contractor personnel, only 4.6 percent were located with organizational elements. The majority of personnel (33.5 percent) were stationed at the fixed locations and in the rear areas (62 percent). (See Table 2-3.) Most of those personnel provided transportation support and were of foreign (i.e., non-U.S.) origin. The small number of personnel found stationed at organizational locations is consistent with the information received from the various Corps Support Command (COSCOM) and Division Support Command (DISCOM) commanders; they encountered contractor personnel infrequently, and they reported having very little contractor support on hand. Contractor personnel stationed at organizational locations were in violation of the Army policy that restricts contractor personnel from being stationed permanently forward of the Corps' rear boundary.

Personnel serving in fixed locations were almost evenly split between U.S. contractors and DACs. United States contractors provided 88 percent of all of the personnel serving at organizational locations.

Personnel Who Crossed the Border into Iraq and Kuwait During the Ground Offensive (Phase Charlie)

We identified 34 personnel who accompanied units into Iraq and Kuwait during the ground war. This represents less than 1 percent of all contractor and DAC personnel who were serving at the time. The personnel who crossed were exclusively from 10 U.S. contractors and were colocated with 16 different Army organizations. Those personnel supported the Bradley Fighting Vehicle, M1 Tank, M1A1 Tank, mobile subscriber equipment (MSE), OH-58D Helicopter, PATRIOT Missile, and common hardware and software. Their average stay was 90 hours, which is only

TABLE 2-3

**CONTRACTOR AND DAC PERSONNEL, BY LOCATION,
PROVIDED DURING PHASE CHARLIE**

Contractor	Fixed	Organizational	Rear area	Total
United States	784	185	0	969
Foreign	0	25	2,900	2,925
DACs	770	0	0	770
Total	1,554	210	2,900	4,664

slightly less than the 100 hours of the ground war. We identified no foreign contractors who accompanied units into Kuwait or Iraq.

Contractor Effectiveness

Ascertaining the effectiveness of U.S. contractor operations during ODS/S became very subjective at best. Little hard information, such as contractor performance reports or other data, was found. However, as a whole, the effectiveness of U.S. contractors and their personnel was highly regarded by all Army personnel we interviewed. As expected under the conditions, a small number of contractor personnel did leave the theater or were asked to leave because of performance difficulties. It was reported that many of the U.S. contractor personnel were Army veterans; that experience most likely greatly assisted them in adapting to the rigors imposed during ODS/S and provided them with a wealth of information concerning the systems and functions supported.

The effectiveness of the foreign contractors was not rated as high for three reasons. First, the drivers were not always reliable; second, much of their equipment was well worn; and third, safety regulations were often violated and impossible to enforce.

Judgments about the DAC's effectiveness in providing in-theater support were also subjective. On a whole, their effectiveness was highly regarded by the Army personnel we interviewed. A group of DAC personnel did leave the theater for safety reasons, but that is not surprising during combat situations.

Contractor Costs

The information required to identify or estimate the cost of foreign contractors was not available. The information required to identify or estimate the cost for DACs was not available. The U.S. contracts were in many instances modifications or extensions of existing contracts. Therefore, much of the contractors' cost information was not obtainable. Much of the information received is incomplete; it does not contain the integrity necessary to make any valid calculations. However, we present the data we did collect in Volume 2, Chapter 2.

HISTORICAL PERSPECTIVE

A paper prepared by the U.S. Army Center of Military History provides a historical perspective about contractors supporting the Army during wartime. It reviews contractor support from the Revolutionary War through the Vietnam War; it concludes that

Civilian contracted services in wartime have been significant, extensive, and diverse. Such services have generally concentrated in the support functions of transportation, signal, engineer, maintenance, and medical.

In transportation there has been a consistent pattern in the use of civilians in all wars.

The maintenance function has increasingly relied on contracted civilians to provide technical expertise in the 20th century. As Army equipment has grown more sophisticated, contracted technicians have been employed in direct support maintenance activities as well as depot-level maintenance.

The scope of employment of civilians in support of field armies is significant and consistent over the course of U.S. wars. The pattern that emerges from the 19th century shows a ratio of one civilian supporting six soldiers (1:6). In the 20th century, the pattern is less clear, but if one takes the largest total war, World War II, and the most recent limited war, Vietnam, the ratios are very close (1:7 and 1:6), respectively.²

Thus, the use of contractors to support combat operations in a war zone is not new; it is a subject that has received a great deal of attention in the past. The paper

²Epley, William W. *Contracting in War: Civilian Combat Support of Field Armies*, U.S. Army Center of Military History, Washington, D.C. (Undated)

demonstrates that ample precedence exists for the extensive employment of contractors during ODS/S.

ARMY DOCTRINE

Army policy and doctrine provides guidance for the use of contractors and DACs on the battlefield. Applicable references and key statements on policy and doctrine follow:

Army Regulation 700-9, *Policies of the Army Logistic System*, states the following:

In the overseas theater of operations -

- (1) Maintenance support forward of the corps rear boundary normally will be performed by military personnel.
- (2) Nonmilitary maintenance support within the corps area will usually be limited to short-term tasks. Tasks may be for initial fielding of equipment, or to overcome specific deficiencies affecting the mission readiness of a unit. These tasks are the type of tasks that can only be performed by contractor, DA civilians, or local nationals [including host nation support (HNS)].
- (3) Behind the corps rear boundary, reasonably assured HNS and civilian maintenance support [as listed in (2) above] may work out of semi-fixed facilities. This may be acceptable as a prudent risk to supplement table(s) of organization and equipment (TOE) maintenance.

.....
... enough DoD-owned transportation resources will be maintained and operated to supplement available commercial transportation for emergency and wartime needs. Reasonably assured HNS capability will be complemented with DoD-owned transportation resources.
.....

When new major items or weapon systems are fielded, consolidated or package shipment of material will be considered to ensure efficient fielding and avoid reduction of the user's readiness posture. "Total package/unit material fielding" will be the standard method used for AMC-fielded major items/weapon systems. Material will be distributed directly from production or vendor to the customer to reduce transportation and handling costs

Field Manual 100-10, *Combat Service Support*:

The Logistics Civil Augmentation Program (LOGCAP) covers the planning process for the use of civilian contractors during wartime situations much as we did during the Vietnam War for transportation, construction, and a

variety of other services. The objective is to plan for the use of civilian contractors to perform selected services in wartime to augment Army forces - either U.S., or host country, or third country. Using civilian contractors in a theater of operations releases military units for other missions or fills shortfalls.

...source of support has increasingly become the highly competent DA civilian staff members who have signed agreements to remain in place in overseas activities in wartime. They will perform critical functions especially in the COMMZ in supervising or working in intermediate (GS) maintenance, identifying and solving weapon system problems (AMC logistics assistance force), and continuing their essential peacetime Combat Service Support (CSS) functions.

Field Manual 700-80, *Logistics*:

Contract maintenance plays a significant role in fulfilling the Army's maintenance mission. It is used particularly to meet peak loads... use of commercial facilities also underwrites the Army's capacity to meet the greater maintenance demands which would result from partial or total mobilization.

Thus, it is clear that there are both Army policies and precedents to utilize both contractors and DACs to provide logistic support on the battlefield. The question remains: how much and what type of functions can be, and should be, supported in this manner? While a complete resolution of these issues is beyond the scope of this study, this report may aid in answering those questions.

SUMMARY OF SUPPORT

Table 2-4 depicts the number of contractors, contractor personnel (U.S. and foreign), and DACs employed, by logistics phase. Of course, most contractors provided support during all four phases. Recall that the total number of U.S. contractors providing support at some time during the later phases was 76 (see Table 2-1). Table 2-4 emphasizes the steady growth and comprehensiveness of contractor and DAC support over the phases of ODS/S.

Organizational Assignments

Assignment of the contractor organizations to the military commands in ARCENT was complex. A total of 98 separate contracts were awarded and administered by eight different contracting commands. Appendix C is a listing of contractors by AMC MSC and other organizations contracting for support. After the contracts were negotiated and awarded, the U.S. contractors reported to the senior

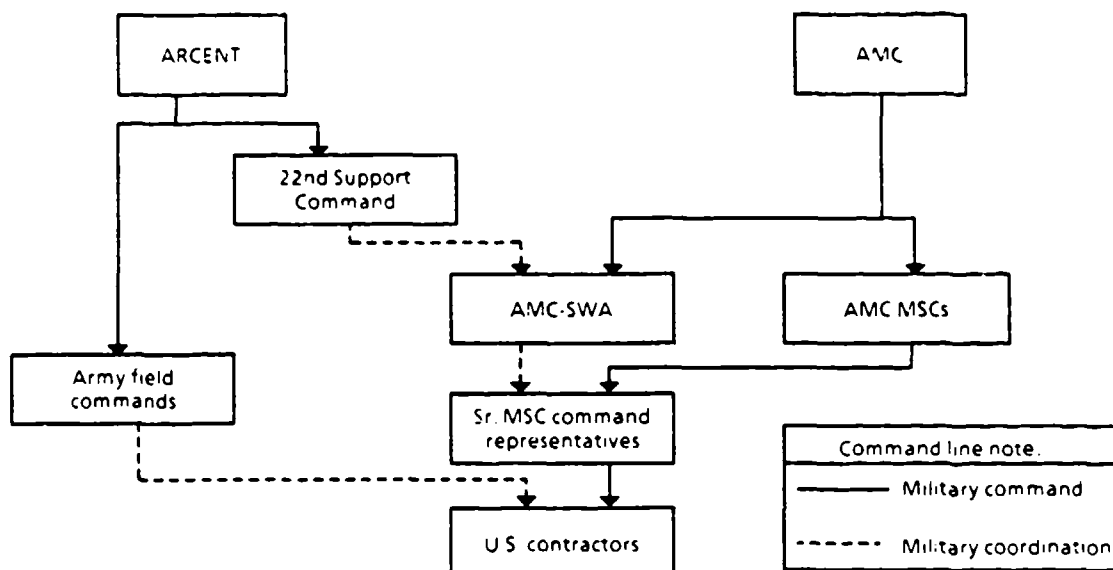
TABLE 2-4
CONTRACTOR AND DAC SUPPORT, BY LOGISTICS PHASE

Personnel Phases	Initial 8 Aug 90 - 31 Oct 90	Alpha 1 Nov 90 - 15 Jan 91	Bravo 16 Jan 91 - 22 Feb 91	Charlie 23 Feb 91 - 28 Feb 91
United States Contractors Personnel	41 515	67 799	71 945	71 969
Foreign Contractors Personnel	10 883	20 2,465	19 2,937	18 2,925
DACs Contractors Personnel	NA 30	NA 461	NA 767	NA 770
Totals Contractors Personnel	51 1,428	87 3,725	90 4,649	89 4,664

Note: NA = not applicable

MSC representative attached to AMC-SWA, which was stationed with the 22nd Support Command (see Figure 2-1). However, they responded to, and were physically housed at, numerous fixed and organizational locations. A number of these contractors simply continued to support the units that they had been supporting before ODS/S. Most of the foreign truck and bus contractors were under the control of the 7th Transportation Group. Their equipment was usually allocated, on a daily or some other periodic basis, to requesting organizations. Figure 2-1 depicts the U.S. contractor organizational relationships.

The DAC organizational assignments under ARCENT were fairly straightforward since the majority of the DAC personnel were AMC employees and responded to the Army Support group (ASG)-SWA. The ASG-SWA structure did not exist prior to the war. During the operation, almost 75 percent of the DACs in the theater were assigned to this organization. It maintained a close relationship with the 22nd



Notes: ARCENT = U.S. Army Central Command; AMC = Army Materiel Command; AMC-SWA = Army Materiel Command Southwest Asia; MSC = Major Subordinate Command.

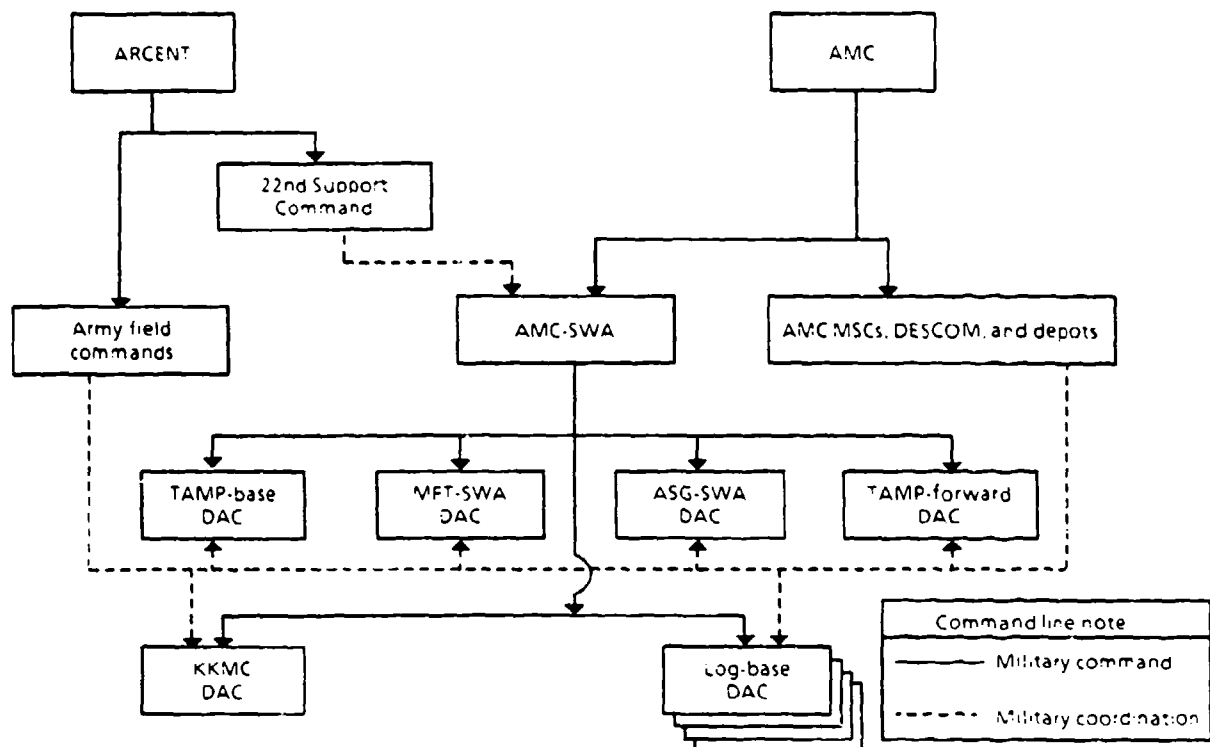
FIG. 2-1. ORGANIZATIONAL ALIGNMENTS - CONTRACTOR-OPERATED SUPPLY, MAINTENANCE, AND TRANSPORTATION FUNCTIONS

Support Command. Therefore, both local command and technical direction came from the same organization. However, the DAC-staffed organizations maintained strong technical and logistical ties with their sponsoring CONUS activities and with the Depot Systems Command (DESCOM). These organizational arrangements allowed AMC to provide in-theater support rapidly and effectively (see Figure 2-2).

SUMMARY OF CONTRACTOR SUPPORT

In this section, we detail the support provided at the various locations on the battlefield. In the August to October time frame, contractor support was developing in the theater. At the end of the initial phase, 41 U.S. contractors employing a total of 515 personnel were in place. Ten foreign contractors employing 883 personnel were also being used. By the Charlie Phase, the number of contractors and contractor personnel supporting Army forces in theater had reached its peak. Table 2-5 lists U.S. contractors. Table 2-6 lists foreign contractors.

A total of 76 U.S. contractors employing 998 personnel supported the operations. When the ground offensive began, 71 U.S. contractors employing 969 personnel and 18 (of 22) foreign contractors employing 2,925 personnel were in



Notes: ARCENT = U.S. Army Central Command; AMC = Army Materiel Command; SWA = Southwest Asia; TAMP = Theater Aviation Maintenance Program; MFT = Materiel Fielding Team; ASG = Army Support Group; DAC = Department of the Army Civilian; DESCOM = Depot Systems Command; MSC = Major Subordinate Command; King Khalid Military City

FIG. 2-2. ORGANIZATIONAL ALIGNMENTS - MAJOR DAC-STAFFED ORGANIZATIONS

use. As the ground offensive began, 3,894 people from 89 contractor companies were involved. Seventy-five percent of the U.S. contractors provided 9 or fewer personnel; only 4 contractors provided more than 50 personnel.

Summaries of the composition of contractor operations are provided in Tables 2-7 and 2-8. Tables 2-4 and 2-7 show U.S. contractors by logistic phase, number of contractors, and the supported functions of maintenance, supply, and transportation. Table 2-8 presents the same data for foreign contractors. These two tables highlight the significance of U.S. contractor support in the maintenance function and the equally strong foreign support to the transportation mission. Appendix C summarizes the U.S. contractors by AMC and MSC and other contracting offices by logistic phase.

TABLE 2-5
U.S. CONTRACTORS SUPPORTING ODS/S

Contractors	
Aeromaritime Mediterranean Corporation (2) Allison Gas Turbine Division - GMC (2) ARINC Research Corporation (3) Automated Research Systems (5) AYDIN Corporation (3) Beech Aerospace Service, Inc. (2) Bell Helicopter Textron, Inc. (2) Boeing Helicopters (2) Brown International Corporation (4) CCL Inc. (3) Chem-Nuclear Systems, Inc. (1) Cincinnati Electronics Corporation (3) COBRO Corporation (2) DynCorp (2) Electronics & Space Corporation (5) Everett Equipment, Inc. (5) FMC Corporation (5) GE-ASD (5) GE Defense Systems Division (5) General Dynamics Land Systems Division (1) General Dynamics Land Systems Division (5) General Dynamics Services Company (5) General Dynamics Services Company (5) General Electric Aerospace (3) General Electric Company (2) General Instruments (2) GTE Government Systems Corporation (3) GTE Government Systems Corporation (3) GTE Government Systems Corporation (3) Honeywell (2) Honeywell Military Avionics Division (1) Howell (2) Hughes (2) Hughes Aircraft Company (1) Hughes Aircraft Company (4) Hughes Aircraft Company (5) ITT (2) Johnson Controls World Services, Inc. (2)	Kaman Sciences Corporation (5) Laguna Industries, Inc. (3) Librascope (3) Litton Data Systems (3) Lockheed Support Systems, Inc. (6) Lockheed Support Systems, Inc. (2) Loral (3) Loral Vought Systems, Inc. (4) Mack Trucks, Inc. (5) ManTech Field Engineering Corporation (3) Martin Marietta Corporation (2) McDonnell Douglas Electronic Systems Company (4) McDonnell Douglas Electronic Systems Company (4) McDonnell Douglas Helicopter Company (2) McDonnell Douglas Helicopter Company (2) MILTOPE Corporation (3) Motorola, Inc. (3) Northrop (2) Oshkosh Truck Corporation (5) Pentastar Electronics, Inc. (1) Petroleum Helicopter Company (2) Potomac Research, Inc. (3) Raytheon Corporation Missile Systems Division (4) Raytheon Corporation Missile Systems Division (4) Raytheon Corporation Missile Systems Division (4) Rockwell International Corporation (3) Rockwell Tactical Systems Division (4) Sanders (2) Scientific Atlantic (2) SERV-AIR, Inc. (3) Snorts Brothers (2) Sikorsky Aircraft Division (2) Sikorsky International Products, Inc. (2) Task Research (2) Teledyne Continental Motors (5) Textron Lycoming (5) TRI-EX Tower Corporation (3) Willbros Butler Engineers, Inc. (1)

Note: Numbers after the contractors' names indicate the awarding contracting office: (1) = AMCCOM, (2) = AFCON, (3) = CECOM, (4) = AFMCOM, (5) = PACOM, and (6) = FPMHOD. Several of these contractors were awarded more than one contract; if so, the names appear for each separate contract awarded.

Contractor Locations

Principal locations of contractors were as shown in Table 2-9.

TABLE 2-6
FOREIGN CONTRACTORS SUPPORTING ODS/S

Contractors	
Abdullah A.M. Al-Khodari Est. (2)	Ali Saleh Alamri Est. (2)
Adil Al-Misehal (2)	American President Lines (3)
Ahmad N. Albinali & Sons (2)	Bandar International (2)
Al Askar Trading Est. (2)	Dallah Transport Co. (2)
Al Maqam Contracting (2)	Farrell Lines (3)
Al Matrood Trading Est. (2)	Gulf Bridge Est. (2)
Al-Masarah LTD (2)	Humoud Ibrahim Al-ziab Co. LTD (2)
Al-Masarah LTD(2)	Ibrahim Al-Quatani Est. (2)
Al-Mawla General Services (2)	Lykes Lines (3)
Al Snamrany Metal Industries (2)	Sealand (3)
Al-Zhick Rullo Est. (2)	Thyssen Henschel (1)

Note: Numbers after the contractors' names indicate the awarding contracting office; i.e., (1) = AMCCOM; (2) = ARCENT, and (3) = HQ MSC.

TABLE 2-7
SUMMARY OF U.S. CONTRACTOR PERSONNEL BY LOGISTIC PHASE AND BY FUNCTION

Phase	Number of U.S. contractors			
	Total number of contractors	Maintenance	Supply	Transportation
Initial	41	41	12	4
Alpha	67	63	22	6
Bravo	71	70	23	6
Charlie	71	70	23	6

Note: Numbers are not additive. Some contractors provide more than one type of function; hence, the total figures do not directly reflect the data in any of the figures from the three service category columns.

Contractor Activities

Early in the operation, maintenance support for 42 weapon systems and major end items was provided. By the end of the operation, 72 weapon systems and major

TABLE 2-8

SUMMARY OF FOREIGN CONTRACTORS BY LOGISTIC PHASE AND BY FUNCTION

Phase	Number of foreign contractors			
	Total number of contractors	Maintenance	Supply	Transportation
Initial	10	1	1	9
Alpha	20	3	1	17
Bravo	19	1	0	18
Charlie	18	0	0	18

Note: Numbers are not additive. Some contractors provide more than one type of function; hence, the total figures do not directly reflect the actual sum of the figures from the three service category columns.

end items were being supported. (Weapon systems and major end items supported by the contractors in the theater of operations are listed in Appendix F.) Different levels and combinations of levels of maintenance support were available for individual systems; however, the predominant type of maintenance support provided was technical support and training, although the full range of maintenance support was provided.

Foreign contractor support was almost entirely to provide for contracted trucks and buses with drivers, along with supporting maintenance, translation, and scheduling services. At the height of the operation, 13 contractors provided over 2,900 trucks, buses, and their drivers. The trucks and buses were primarily used to move cargo, equipment, and personnel at echelons above the division level. The vehicles operated forward to the log bases. We found only two contractors exclusively providing supply support, using a maximum of about eight personnel. The type of supply support provided by U.S. contractors was primarily Class IX, principally for systems support, fielding, and technical support.

Most U.S. contractors were located at EAC. The contract effort in corps/division rear areas was achieved principally through Contractor Field Service Representatives (CFSRs) or contact teams. Probably because of their relatively small numbers and the fact that they dressed in the same attire as the other civilians, the U.S. contractors were not highly visible to logistic commanders at the corps level and

TABLE 2-9
SUMMARY OF CONTRACTOR LOCATIONS IN ODS/S

Fixed locations	
Abu Dhabi, UAE	King Fahd AFB, SA
TAMP-base	Riyadh, SA
KKMC, SA	Log base Alpha
CECOM Forward	Log base Bastogne
Rainbow SRA #2	
Ad Dammam, SA	Log base Bravo
MFT-SA	Log base Charlie
TACMIS RSC	Log base Echo
Others	
Al Jubail, SA	Theater Army Area
Dhahran, SA	Other
AMC-SWA	
CECOM SRA	
Rainbow SRA #1	
TAMP-Forward	
Organizational locations	
1st Armored Division	24th Infantry Division (M)
1st Cavalry Division	35th Signal Brigade
1st Infantry Division	82d Airborne Division
2d Armored Cavalry Regiment	101st Airborne Division (AA)
3d Armored Division	III Corps Elements
3d Armored Cavalry Regiment	VII Corps
TF 8-43/32d ADCOM	XVIII Airborne Corps
11th Air Defense Artillery Brigade	Other

Note: ADCOM = Air Defense Command

below. Those commanders reported little or no contact with the U.S. or foreign contractors.

Thirty-six personnel working through 10 contracts crossed into Iraq-Kuwait with the combat elements. Table 2-10 identifies the contractors who crossed the border, their organizations or locations, the number of personnel involved, the

TABLE 2-10

CONTRACTORS CROSSING THE BORDER INTO IRAQ/KUWAIT DURING THE 100-HOUR WAR

Contractor	Organization/location	Personnel	Duration	Weapon system or hardware/software
General Dynamics Land Systems Division	1st AD	1	3 days	M1, M1A1 tank
	1st Cavalry	1	All days	
	24th ID	1	All days	
	3rd AD	1	All days	
	3rd ACR	1	3 days	
	USMC	1	All days	
McDonnell Douglas Electronic Systems Co	82nd ABD	1	All days	OH-58D MMS
MILTOPE Corporation	1st Cavalry	2	2 days	Common hardware/ software PATRIOT
	Missile Division	2	3 days	
Raytheon Corporation*	11th ADA BDE	1	3 days	PATRIOT
	Missile Systems Division	2	3 days	
TRC Corporation	1st CAV	1	All days	Bradley fighting vehicle
	1st ID	1	All days	
	2nd AD	1	All days	
	2nd ACR	1	All days	
	24th ID	1	All days	
	3rd ACR	1	All days	
GTE Government Systems Corporation	1st CAV	3	All days	MSE
	2nd AD	1	All days	
	3rd AD	3	All days	
	III Corps Elements	1	All days	
	USMC	1	All days	
GTE Government Systems Corporation	Kuwait City	1	2 days	*RITAC Switches
	Iraq	1	1 day	
Teledyne Continental Motor	VII Corps	1	All days	ALDS 1790 Diesel engines
	XVIII ABC	1	All days	
Textron Lycoming	1st AD	1	All days	M1, M1A1 tank Gas turbine
	3rd ACR	1	All days	
	USMC	1	All days	
10 contracts total	16 different organizations/locations	36	3.75 days average	Various

Notes: AD = Armored Division; ID = Infantry Division; ACR = Armored Cavalry Regiment; USMC = United States Marine Corps; ABD = Airborne Division; MMS = Mast Mounted Site; BDE = Brigade; CAV = Cavalry; ABC = Airborne Corps

* Raytheon Corporation provided support under two contracts

duration of their stay, and the weapon system they were supporting in the cross-border operation.

SUMMARY OF DEPARTMENT OF THE ARMY CIVILIAN SUPPORT

The DAC support began almost at the same time the first U.S. troops deployed to SWA; the DAC personnel reached full strength by mid-January 1991. Most of the DACs came from AMC organizations; however, a few came from installation organizations. Unlike the contractor buildup, DAC personnel were not built up early and rapidly.

By October, only 30 DAC personnel had arrived in-theater, while 515 U.S. contractor and 883 foreign contractor personnel were employed during the same time. However, by the time the ground offensive had begun, the number of DACs in-theater had topped out at 770. A total of 36 organizations, both within and outside AMC, assigned DAC personnel to the campaign. Table 2-11 shows the major Army organizations that provided DAC personnel. The principal source of personnel was the AMC depots.

TABLE 2-11

MAJOR ARMY ORGANIZATIONS PROVIDING DAC PERSONNEL FOR IN-THEATER ODS/S SUPPORT

Aberdeen Proving Ground (APG), MD	Lexington-Blue Grass Depot Activity (LBDA), KY
Armament, Munitions and Chemical Command (AMCCOM), IL	Mainz Army Depot (MZAD), Germany
Army Materiel Command-Europe (AMC-EUR), Germany	Materiel Readiness Support Activity (MRSA), KY
Anniston Army Depot (ANAD), AL	Missile Command (MICOM), AL
Communications-Electronics Command (CECOM), NJ	Pine Bluff Arsenal (PBA), AR
Corps of Engineers (COE), Washington, DC	Pueblo Depot Activity (PJDA), UT
Corpus Christi Army Depot (CCAD), TX	Red River Army Depot (RRAD), TX
Depot Systems Command (DESCOM), PA	Sacramento Army Depot (SAAD), CA
Defense Distribution Region East (DDRE), PA	Seneca Army Depot (SEAD), NY
Dugway Proving Grounds (DPG), UT	Sierra Army Depot (SAD), CA
Fort Carson, CO	Systems Integration and Management Activity (SiMA), MO
Fort Lee, VA	Tank-Automotive Command (TACOM), MI
Fort Lewis, WA	Tooele Army Depot (TEAD), UT
Headquarters Army Materiel Command (HqAMC), VA	Test and Evaluation Command (TECOM), MD
Letterkenny Army Depot (LEAD), PA	Tobyhanna Army Depot (TOAD), PA
	Yuma Proving Grounds (YPG), AZ

Table 2-12 summarizes the number of DAC operations by phase; and the supported functions; maintenance, supply, and transportation. On one hand, this table highlights the significance of the DAC maintenance and supply support, and on the other hand, the absence of transportation support. Appendices D and E are a detailed summary of DAC fixed, and organizational locations (both permanent and temporary assignment), by logistics phase and by function.

TABLE 2-12

SUMMARY OF DAC ORGANIZATIONS BY LOGISTICS PHASE AND BY FUNCTION

Phase	Number of DACs			
	Total number DAC locations	Maintenance	Supply	Transportation
Initial	3	3	3	0
Alpha	9	9	8	0
Bravo	12	12	11	0
Charlie	11	11	11	0

Note: Numbers are not additive. Some DAC locations provide more than one type of function; hence, the total figures do not directly reflect the actual sum of the figures from the three service category columns.

DAC Locations

Principal locations of the DACs were as shown in Table 2-13.

DAC Activities

Early in the operation, DAC provided maintenance support for 18 weapon systems and major end items. By the end of the operation, 21 systems were being supported by in-theater DAC personnel. A complete list of all systems supported by DACs and contractors, by phase, is provided in Appendix F. The DAC organizations in the Persian Gulf theater were staffed to provide different levels and combinations of levels of maintenance support; however, the most prevalent type of support was general support (GS) and depot maintenance.

The DAC-staffed organizations performed major supply support missions. Approximately 40 percent of the assigned DAC personnel performed a supply function. That supply support was primarily Class IX, repair parts supply, for the

TABLE 2-13

SUMMARY OF DAC LOCATIONS IN ODS/S

Fixed locations	
Abu Dhabi, UAE	KKMC, SA
TAMP-base	Log base Alpha
Ad Dammam, SA	Log base Bravo
MFT-SA	Log base Bastogne
ASG-SWA	Log base Charlie
Dhahran, SA	Log base Delta
AMC-SWA	Log base Echo
TAMP-Forward	
Organizational locations	
24th Infantry Division (M) (only during Alpha Phase)	

systems being supported and support of weapon systems fielding. The DACs provided limited supply support of Class IX directly to operational units.

Initially, the DAC effort was conducted at TAMP-base in Abu Dhabi, UAE; at ASG-SWA in Ad Dammam, SA; and at TAMP-Forward in Dhahran, SA. By January 1991, DACs were still primarily at these same sites, but staffing two additional commands, the MFT-SA in Ad Dammam and the AMC-SWA in Dhahran. Small DAC contingents had also been established at KKMC, SA and at six log bases. In general, all of the DACs located at echelons above corps level were in fixed locations.

As the scope and intensity of the operations increased, the number of DACs at the fixed locations increased. Throughout the campaign, the DACs were located at the fixed locations and had limited contact with the green-suit field Army. A small number of the DAC personnel were temporarily assigned away from their fixed locations. Other than LARs, there was only a small DAC effort in the corps/division rear areas. We found no evidence to suggest that any of these DAC personnel crossed the border during the ground campaign.

CHAPTER 3

SUPPORT PROVIDED BY CONTRACTORS AND DEPARTMENT OF THE ARMY CIVILIANS DURING OPERATIONS DESERT SHIELD AND DESERT STORM

INTRODUCTION

Along with three associated appendices and Volume 2, this chapter presents the detailed results of our study. This material shows the scope and depth of contractor and DAC support in the theater of operations during ODS/S. This chapter answers four questions concerning contractors and DACs: "Who were the contractors and DACs, where were they, what did they do in ODS/S, and when were they there?"

The remaining portion of this chapter is divided into four sections, one for each of the logistical phases – Initial, Alpha, Bravo, and Charlie – that occurred during ODS/S. Each section is further divided into five subsections where the detailed information for that logistical phase is presented. These subsections are as follows:

- Description
- Phase Summary
- Who Provided Support?
- Where Was Support Provided?
- What Support Was Provided?

In each subsection, the support furnished by U.S. contractors, foreign contractors, and DACs is examined.

SUMMARY OF PHASES

Initial Phase – Early Deployment (8 August Through 31 October 1990)

Description

In response to the 2 August 1990 invasion of Kuwait by Iraq, the President of the United States, on 6 August 1990, executed Operation Desert Shield, deploying U.S. Military Forces to the Persian Gulf region. The first contingent of soldiers

arrived in Saudi Arabia by airlift on 8 August. During the initial phase, the following major Army combat units were deployed in the Persian Gulf theater:

- HQ, 3d U.S. Army (ARCENT)
- HQ, XVIII Airborne Corps
- 1st Cavalry Division
- 24th Infantry Division
- 101st Airborne Division
- 82d Airborne Division
- 3d Armored Cavalry Regiment
- 11th Air Defense Artillery Brigade
- 197th Infantry Brigade.

These major combat units were initially positioned in Northeast Saudi Arabia, in an area, north to south, stretching approximately 50 to 250 kilometers from Dhahran. The objective of these units was to resist any movement of Iraqi ground units into Saudi Arabia. During the same time frame, both the CENTCOM (U.S. Central Command) and its Army element (i.e., ARCENT), were established in the theater of operations.

Early in the initial phase, CENTCOM planning limitations were imposed on the maximum number of troops that could be deployed into the theater. Therefore, priority was given to the deployment of combat instead of logistic units in order to ensure maximum combat power on the ground to meet the Iraqi threat. The following major Army logistic units were deployed or established during this initial phase:

- 22nd Support Command
- 1st Corps Support Command
- 7th Transportation Group
- Division Support Commands.

This type of deployment, i.e., maximum combat power with limited logistic support, dictated an immediate need for additional logistic support beyond the Army's logistical capability being assembled in-theater. Using contractors was an appealing

option. The contractors were immediately available, experienced, and did not count against the CENTCOM-imposed force structure limitations. Therefore, heavy reliance was placed on contractor, and later DAC, support to supplement the logistics forces. For example, the General Dynamics Services Company played a critical role early on in providing all types of support to Army units as they arrived at the Ad Dammam port.

In the August to October time frame, the U.S. contractors were located on the battlefield at nine fixed locations and employed 424 personnel, and with eight operational Army field units that employed 91 personnel. Of the nine fixed locations, one, the TAMP-base, was in Abu Dhabi, UAE; six were at cities or other permanent sites in Saudi Arabia; one was at a U.S. Army logistic base in Saudi Arabia; and one was operating at the theater level. The one foreign maintenance contractor supporting U.S. Army forces was located at Ad Dammam, SA. All other foreign contractors were operating trucks and buses forward to the log bases. The 30 DAC personnel were located at the fixed locations; Abu Dhabi, UAE; Ad Dammam, SA; and Dhahran, SA.

Figure 3-1 is a map of the theater. It depicts contractor locations during the initial phase.

Phase Summary

The Army had contracts with 51 companies to provide various types of maintenance, supply, and transportation support during the initial phase. Those contractors provided that support by providing 1,398 people. Of these people, 515 worked for 41 U.S. contractors and the remaining 883 people worked for 10 foreign contractors. Thirty DACs also provided support during this phase. The contractors and DACs totaled 1,428 people divided among the maintenance (439), supply (95), and transportation (894) functions. (Refer to Table 3-1.)

During this phase, contractor and DAC personnel provided support to nine fixed locations, eight organizational locations, and the rear area. United States contractors provided support at all of the fixed locations and the only support to the organizational locations. The DAC support was limited to three of the fixed locations. Foreign contractors provided support to the rear area and to one fixed location. The largest number of personnel (882) (i.e., contractor plus DACs), were stationed in the rear area. Of the remaining personnel, 455 were located at fixed locations and 91 at

TABLE 3-1
INITIAL PHASE SUMMARY

Personnel	Number	Fixed locations				Organizational locations				Rear area	Grand total
		Maint.	Supply	Trans.	Total	Maint.	Supply	Trans.	Total	Trans.	
U.S.	41	343	70	11	424	83	7	1	91	C	515
Foreign	10	1	0	0	1	0	0	0	0	882	883
DACs	NA	12	18	0	30	0	0	0	0	C	30
Total	51	356	88	11	455	83	7	1	91	882	1,428

Note: NA = Not applicable

organizational locations. Dhahran, S.A. was the fixed location with the largest number of permanent personnel (259), while the organizational location with the largest number of permanent personnel (65) was the 1st Cavalry.

Each of the 41 U.S. contractors provided maintenance support during this phase. Also, 12 of these provided supply support and 4 provided transportation support. Of the 10 foreign contractors, 1 provided maintenance support, 1 provided supply support, and 9 provided transportation support. The DAC support consisted of maintenance and supply. The list of weapon systems and end items supported during this phase is in Appendix F.

Who Provided Support?

U.S. Contractors. Table 3-2 lists the 41 U.S. contractors that provided support during this phase and the personnel each furnished (by functional area). These 515 people were divided among the maintenance (426), supply (77), and transportation (12) functions. Three companies had multiple contracts: GTE Government Systems Corporation and General Dynamics Services Company each had two contracts while the Raytheon Corporation Missile Systems Division had three.

The AMC MSCs established contracts with 40 of the contractors, and Fort Hood let 1 contract. Among the MSCs, AMCCOM let 3 contracts, ATCOM let 22, CECOM let 7, MICOM let 4, and TACOM let 4. Table 3-3 is annotated to show these relationships. For details about the locations and the functions performed by the contractors associated with each MSC or Fort Hood, refer to Appendix C.

TABLE 3-2

U.S. CONTRACTOR SUPPORT DURING THE INITIAL PHASE

Contractors	Number of personnel			
	Maint.	Supply	Trans.	Total
Beech Aerospace Service, Inc. (2)	26	8	0	34
Bell Helicopter Textron, Inc. (2)	2	0	0	2
Boeing Helicopters, Inc. (2)	1	0	0	1
CCL, Inc. (3)	1	0	0	1
COBRO Corporation (2)	2	0	0	2
DynCorp, Inc. (2)	100	35	0	135
FMC Corporation (5)	1	0	0	1
GTE Government Systems Corporation (3)	6	3	1	10
GTE Government Systems Corporation (3)	1	0	0	1
General Dynamics Land Systems Division (1)	2	0	0	2
General Dynamics Services Company (5)	98	4	8	110
General Dynamics Services Company (5)	20	6	1	27
General Electric Aerospace (3)	2	0	0	2
General Electric Company (2)	2	0	0	2
General Instruments (2)	2	0	0	2
Honeywell (2)	2	0	0	2
Honeywell Military Avionics Division (1)	2	0	0	2
Howell (2)	2	0	0	2
Hughes (2)	1	0	0	1
ITT (2)	1	0	0	1
Johnson Controls World Services, Inc. (2)	11	4	0	15
Lockheed Support Systems, Inc. (6)	39	1	0	40
ManTech Field Engineering Corporation (3)	13	1	0	14
Martin Marietta Corporation (2)	16	0	0	16
McDonnell Douglas Electronic Systems Company (4)	3	0	0	3
McDonnell Douglas Helicopter Company (2)	7	0	0	7
Northrop (2)	1	0	0	1
Pentastar Electronics, Inc. (1)	2	0	0	2
Petroleum Helicopter Company (2)	1	0	0	1
Potomac Research, Inc. (3)	5	0	0	5
Raytheon Corporation Missile Systems Division (4)	3	0	0	3
Raytheon Corporation Missile Systems Division (4)	1	0	0	1
Raytheon Corporation Missile Systems Division (4)	6	0	0	6
SERV-AIR, Inc. (3)	18	0	0	18
Sanders (2)	1	0	0	1
Scientific Atlantic (2)	2	0	0	2
Sikorsky Aircraft Division (2)	3	0	0	3
Sikorsky International Products, Inc. (2)	15	15	0	30
Task Research (2)	1	0	0	1
Textron Lycoming (5)	4	0	0	4
Willbros Butler Engineers, Inc. (2)	0	0	2	2
Total	426	77	12	515

Note: 1 = AVCCOM, 2 = ATCOM, 3 = CECOM, 4 = VCOM, 5 = TACOM and 6 = Fort Hood

The range of personnel provided by each contractor varied greatly. Table 3-3 shows that about 73 percent of the contractors provided 9 or less people and only about 5 percent of the contractors provided more than 100 people. The average number of personnel provided by each contractor was 12.5.

TABLE 3-3
RANGE OF U.S. CONTRACTOR PERSONNEL PROVIDED
DURING INITIAL PHASE

Range	Number of contractors
1 through 9	30
10 through 49	9
50 through 99	0
100 or more	2

Foreign Contractors. Table 3-4 shows the 10 foreign contractors who provided support during the initial phase and the personnel they furnished (by functional area). These 883 people were divided among the maintenance function (1 person) and transportation function (882 people).

TABLE 3-4
FOREIGN CONTRACTOR SUPPORT DURING INITIAL PHASE

Contractors	Number of personnel			
	Maint.	Supply	Trans.	Total
Abdullah A M Al-Khodari Est. (2)	0	0	a	a
Al Maqam Contracting (2)	0	0	a	a
Al-Mawla General Services (2)	0	0	a	a
American President Lines (3)	0	0	24	24
Farrell Lines (3)	0	0	17	17
Gulf Bridge Est. (2)	0	0	a	a
Ibrahim Al-Quatani Est. (2)	0	0	a	a
Lykes Lines (3)	0	0	17	17
Sealand (3)	0	0	24	24
Thyssen Henschel (1)	1	0	0	1
Total	1	0	882	883

Note: (1) = AMCCOM (2) = ARCENT and (3) = HQ MSC

These two contractors provided a total of 800 personnel. A detailed breakout of the number of personnel by contractor was not available.

The ARCENT established the contracts for five of the contractors, HQ MSC let four, and AMCCOM let one. Table 3-4 is annotated to show these relationships. For details about the locations and the functions performed, refer to Appendix C.

Department of the Army Civilians. The ATCOM and the aggregate of installations, depots, and other organizations (listed in Chapter 2) provided the DAC personnel. Thirty DACs provided support for maintenance (12 people) and supply (18 people). For further details about the locations and the functions performed, refer to Appendix C.

Where Was Support Provided?

U.S. Contractors. Table 3-5 shows the locations where contractors provided support. (See Figure 3-1 for the location of each contractor on the battlefield.) Each fixed location had on average eight permanent contractors stationed there and each organizational location had two. Dhahran, SA, was the fixed location with the largest number of permanent contractors (27) and the largest number of personnel (242). The organizational location with the largest number of permanent contractors and personnel was the 1st Cavalry Division with four contractors and 65 people. Of the 515 U.S. contractor personnel, 424 were located at these five fixed locations and the remaining 91 personnel were at the six organizational locations.

TABLE 3-5
LOCATIONS WHERE U.S. CONTRACTORS PROVIDED SUPPORT

Fixed location	Organizational location
Abu Dhabi, UAE (P)	1st Cavalry DIV (P) (T)
Ad Dammam, SA (P)	11th ADA BDE (P)
Al Jubail, SA (T)	12th AVN BDE (T)
Dhahran, SA (P) (T)	101st ABN DIV (AA) (P) (T)
KKMC, SA (P) (T)	124th MI BN (P)
King Fahd AFB, SA (T)	24th ID (P) (T)
Log base Bastogne, SA (T)	3rd ACR (P) (T)
Riyadh, SA (P) (T)	Other units (T)
Theater Army Area (T)	

Note: (P) = Permanently stationed and (T) = temporarily stationed. AVN = aviation.

Contractors visited seven fixed locations and six organizational locations over 270 times on a temporary basis. The average fixed-location visit consisted of

1.5 people, lasted 1.25 days, and involved one contractor at a fixed location and two contractors at an organizational location.

Foreign Contractors. Nine of the ten foreign contractors provided permanent support in the rear area with the remaining one stationed at the fixed location of Ad Dammam, SA. (Refer Figure 3-1 for the location of each contractor on the battlefield.) Of the 883 foreign contractor personnel, 882 were located in the rear area and 1 person was at the single fixed location. We found no evidence to show that these contractors visited any location on a temporary basis to provide maintenance and supply support.

Department of the Army Civilians. The DACs were only located at three fixed locations: Abu Dhabi, UAE; Ad Dammam, SA; and Dhahran, SA. Of the 30 DACs providing support, the largest contingency of DACs (17) were located at Dhahran, SA. No evidence was uncovered to indicate the DACs visited any location on a temporary basis.

What Support Was Provided?

U.S. Contractors. Each of the 41 U.S. contractors provided some type of maintenance support. Altogether, they provided 76 separate instances of maintenance support at the various locations they served. Fifty of those instances were at fixed locations and the remaining 26 were at organizational locations. The type of maintenance support provided included organizational, depot maintenance, modifications, deprocessing, training, and technical support. Technical support (17 cases) was the largest maintenance subfunction provided. Twelve U.S. contractors provided 18 separate instances of supply support divided between the fixed locations (66 percent) and organizational locations (33 percent). This support was almost exclusively Class IX support. The small number of contractors (four) who provided the eight cases of transportation support did so from fixed locations, with the exception of one case. In the exception, support was provided at an organizational location.

Foreign Contractors. Nine of the foreign contractors provided transportation support in the rear area. Each of those contractors provided truck driver support, and two provided bus driver support. Each of the contracts required the contractor to provide a vehicle (e.g., a HET, Lowboy, or bus) for the driver. The remaining

TABLE 3-6

INITIAL PHASE - NUMBER OF CASES WHERE FUNCTIONAL AREA SUPPORT WAS PROVIDED

Functional area	U.S. contractors	Foreign contractors	DACs	Total
Maintenance	76	1	3	80
Organizational	3	0	0	3
DS	0	0	0	0
GS	0	0	0	0
Depot	7	0	0	7
ORG-DS	6	0	0	6
ORG-GS	9	0	0	9
ORG-Depot	5	0	0	5
DS-GS	2	0	0	2
DS-Depot	0	0	0	0
GS-Depot	2	0	0	2
AVUM	0	0	0	0
AVIM	5	0	0	5
AVUM-Depot	7	0	0	7
Modification	7	0	0	7
Deprocess	2	0	0	2
Training	8	1	0	9
Technical	17	1	0	18
Supply	18	1	3	22
Class II	0	0	0	0
Class III	1	0	0	1
Class IV	1	0	0	1
Class V	0	0	0	0
Class VII	0	0	0	0
Class IX	15	1	2	18
Fielding	1	0	0	1
Training	0	0	0	0
Technical	0	0	0	0
Installation	0	0	0	0
Transportation	8	9	0	17
Mode	1	0	0	1
Terminal	1	0	0	1
Offloading	0	0	0	0
Bus drivers	0	2	0	2
Truck drivers	0	9	0	9

Note: For this table, the number of subfunctional cases may not equal the number of functional cases. There are two reasons for this: first, a contractor may have performed more than one subfunction at a particular location; second, the information we received only indicated that the major function was in fact performed. DS = direct support, GS = general support, and ORG = organizational support.

contractor provided the maintenance and supply support at a fixed location. That support consisted of maintenance, training, technical support, and Class IX support.

Department of the Army Civilians. The DACs provided maintenance and supply support at each of the three fixed locations at which they were stationed.

Phase Alpha - Preparation and Positioning (1 November 1990 Through 15 January 1991)

Description

The XVIII Airborne Corps and its units, as well as other combat units that arrived during the initial phase found themselves in an austere logistical environment. Those units and the support structure they established became the foundations upon which the theater of operations' logistics structure was developed and matured. The existence and employment of this structure were instrumental in receiving the VII Corps in a timely and effective manner. Contractors played a substantial role in this support. By the time the VII Corps began to arrive, more than one-half of the contractor personnel were already in the theater of operation. During the period when the VII Corps and its units were arriving, almost all of the remaining contractors arrived, with an additional 25 percent of their personnel.

The major combat units that arrived in the theater of operations during this phase were as follows:

- VII Corps
- 1st Armored Division
- 1st Infantry Division
- 2d Armored Division (assimilated into other divisions)
- 3d Armored Division
- 2d Armored Cavalry Regiment

The major logistic units that arrived in theater during this phase were the following:

- 2d Corps Support Command
- Division Support Commands.

During this phase, there was a continuous deployment of the forces to the north and west accompanied by a buildup of the lines of communication and the construction of log bases.

From 1 November 1990 through 15 January 1991, all contractors and DACs were heavily engaged in their support tasks. During this time frame, the U.S. contractors were located at 12 fixed locations employing 605 personnel. Also, they were with 23 Army units, a small number of Marine Corps units, and British operational units. The foreign contractors continued to provide transportation support as in the initial phase, but supplemented that support with a threefold increase in drivers and their trucks and buses.

The DACs who were initially employed at TAMP-base in Abu Dhabi, the ASG-SWA in Ad Dammam, and the TAMP-forward in Dhahran, were still primarily located at these same three sites by January. However, DACs participated in staffing two additional organizations, the MFT-SA in Ad Dammam and AMC-SWA in Dhahran. Very small DAC contingents had also been established at KKMC and at six log bases.

Figure 3-2 is a map of the theater noting the fixed support sites, combat units, and the supporting contractors during this phase.

Phase Summary

The Army had contracts with 87 companies to provide various types of maintenance, supply, and transportation support during the Alpha Phase. These contractors provided this support by providing 3,264 people. Of these people, 799 worked for 67 U.S. contractors and 2,465 worked for 20 foreign contractors. Four hundred and sixty-one DACs also provided support during this phase. Contractors and DACs totaled 3,725 people divided among the maintenance (948 people), supply (317 people), and transportation (2,470 people) functions. (Refer to Table 3-7.)

During this phase, contractor and DAC personnel provided support to 13 fixed locations, 23 organizational locations, and the rear area. United States contractors provided support to 12 of the 13 fixed locations and all of the organizational locations. The DAC support was found at 9 fixed locations and 2 organizational locations. Foreign contractors provided support to the rear area, to 2 fixed locations, and to 1 organizational location. The largest number of personnel (2,420) (i.e., contractors

TABLE 3-7
ALPHA PHASE SUMMARY

Personnel	Number	Fixed locations				Organizational locations				Rear area	Grand total
		Maint	Supply	Trans	Total	Maint	Supply	Trans	Total	Trans.	
U.S.	67	472	118	15	605	182	12	3	194	0	799
Foreign	70	20	3	3	26	0	0	25	25	2,420	2,465
DACs	626	264	187	3	451	10	0	10	10	0	461
Total	87	756	305	15	1,076	192	12	35	229	2,420	3,725

Note: NA = NOT APPLICABLE

plus DACs), were stationed in the rear area. Of the remaining personnel, 1,076 were located at fixed locations and 229 at organizational locations. Ad Dammam, SA (with 507 people) and Dhahran, SA (with 415 people) were the fixed locations with the largest number of permanent personnel. The 1st Cavalry Division was the organizational location with the largest number of personnel (90).

Sixty-five of the 67 U.S. contractors provided maintenance support during this phase. Also, 22 provided supply support and 6 provided transportation support. Of the 20 foreign contractors, 17 provided transportation support, 3 provided maintenance support, and 1 provided supply support. The DACs support consisted of maintenance and supply personnel. The weapon systems and end items supported during this phase are listed in Appendix F.

Who Provided Support?

U.S. Contractors. Table 3-8 shows the 67 U.S. contractors providing support during this phase and the personnel each furnished (by support area). Six companies had multiple contracts: General Dynamics Land Systems Division, General Dynamics Services Company, and McDonnell Douglas Helicopter Company each had two contracts; GTE Government Systems Corporation, Hughes Aircraft Company, and Raytheon Corporation Missile Systems Division each had three contracts. The 799 people supplied by those contractors were divided among the maintenance (654), supply (130), and transportation (15) functions.

The AMC MSCs established contracts with 66 of the contractor; Fort Hood let one. Among the MSCs, AMCCOM let 5 contracts, ATCOM let 23, CECOM let 18, MICOM let 7, and TACOM let 13. Table 3-8 is annotated to show these relationships.

TABLE 3-8

U.S. CONTRACTOR SUPPORT DURING THE ALPHA PHASE

Contractors	Number of personnel			
	Maint.	Supply	Trans.	Total
ARINC Research Corporation (3)	2	0	0	2
AYDIN Corporation (3)	1	0	0	1
Automated Research Systems, Inc. (5)	0	7	0	7
Beech Aerospace Service, Inc. (2)	41	13	0	54
Bell Helicopter Textron, Inc. (2)	3	0	0	3
Boeing Helicopters, Inc. (2)	1	0	0	1
CCL, Inc. (3)	4	0	0	4
COBRO Corporation (2)	3	0	0	3
Chem-Nuclear Systems, Inc. (1)	0	1	0	1
DynCorp, Inc. (2)	150	48	0	198
Everett Equipment, Inc. (5)	1	0	0	1
FMC Corporation (5)	11	0	0	11
GE Defense Systems Division (5)	3	0	0	3
GE-ASD, Inc. (5)	2	0	0	2
GTE Government Systems Corporation (3)	16	4	1	21
GTE Government Systems Corporation (3)	2	0	0	2
GTE Government Systems Corporation (3)	6	0	0	6
General Dynamics Land Systems Division (1)	2	0	0	2
General Dynamics Land Systems Division (5)	28	6	0	34
General Dynamics Services Company (5)	98	4	8	110
General Dynamics Services Company (5)	30	20	3	53
General Electric Aerospace (3)	2	0	0	2
General Electric Company (2)	2	0	0	2
General Instruments (2)	3	0	0	3
Honeywell, Inc. (2)	3	0	0	3
Honeywell Military Avionics Division (1)	4	0	0	4
Howell, Inc. (2)	2	0	0	2
Hughes, Inc. (2)	2	0	0	2
Hughes Aircraft Company (1)	4	0	0	4
Hughes Aircraft Company (4)	2	0	0	2
Hughes Aircraft Company (5)	2	0	0	2
ITT, Inc. (2)	2	0	0	2
Johnson Controls World Services, Inc. (2)	14	5	0	19
Laguna Industries, Incorporated (3)	1	0	0	1
Librascope, Inc. (3)	2	0	0	2
Litton Data Systems (3)	1	0	0	1
Lockheed Support Systems, Inc. (6)	39	1	0	40
Loral, Inc. (3)	4	0	0	4
Loral Vought Systems, Inc. (4)	7	0	0	7
MILTOP Corporation (3)	5	1	0	6
Mack Trucks, Inc. (5)	1	0	0	1
ManTech Field Engineering Corporation (3)	19	2	0	21
Martin Marietta Corporation (2)	20	0	0	20
McDonnell Douglas Electronic Systems Company (4)	3	0	0	3
McDonnell Douglas Helicopter Company (2)	10	0	0	10
McDonnell Douglas Helicopter Company (2)	7	0	0	7
Motorola, Inc. (3)	2	0	0	2
Northrop, Inc. (2)	2	0	0	2
Oshkosh Truck Corporation (5)	1	0	0	1
Pentastar Electronics, Inc. (1)	2	1	0	3

Note: (1) = AWCOW (2) = AWCOW (3) = DECOM (4) = MICOM (5) = TACOM and (6) = Fort Hood

TABLE 3-8

U.S. CONTRACTOR SUPPORT DURING THE ALPHA PHASE (Continued)

Contractors	Number of personnel			
	Maint.	Supply	Trans.	Total
Petroleum Helicopter Company (2)	1	0	0	1
Potomac Research, Inc. (3)	5	0	0	5
Raytheon Corporation Missile Systems Division (4)	8	0	0	8
Raytheon Corporation Missile Systems Division (4)	1	0	0	1
Raytheon Corporation Missile Systems Division (4)	11	0	0	11
Rockwell International Corporation (3)	2	0	0	2
Rockwell Tactical Systems Division (4)	4	0	0	4
SERV-AIR, Inc. (3)	6	0	0	6
Sanders, Inc. (2)	2	0	0	2
Scientific Atlantic, Inc. (2)	2	0	0	2
Sikorsky Aircraft Division (2)	3	0	0	3
Sikorsky International Products, Inc. (2)	15	15	0	30
TRI-EX Tower Corporation (3)	2	0	0	2
Task Research, Inc. (2)	2	0	0	2
Teledyne Continental Motors, Inc. (5)	2	0	0	2
Textron Lycoming, Inc. (5)	14	0	0	14
Willbros Butler Engineers, Inc. (2)	2	2	3	7
Total	654	130	15	799

Note: (1) = AMCCOM; (2) = ATCOM; (3) = CECOM; (4) = MICOM; (5) = TACOM; and (6) = Fort Hood

For details about the locations and functions performed by the contractors associated with each MSC or Fort Hood, refer to Appendix C.

The range of personnel provided by each contractor varied greatly. Table 3-9 shows that more than 77 percent of the contractors provided 9 or fewer people and only about 3 percent of the contractors provided more than 100 people. The average number of people provided by each contractor was 12.

TABLE 3-9

RANGE OF U.S. CONTRACTOR PERSONNEL PROVIDED
DURING ALPHA PHASE

Range	Number of contractors
1 through 9	52
10 through 49	11
50 through 99	2
100 or more	2

Foreign Contractors. Table 3-10 shows the 20 foreign contractors who provided support during the Alpha phase and the personnel each furnished (by support area). Only one contractor had multiple contracts: Al-Masarah LTD had two. The 2,465 people were divided among the maintenance (20 persons) and transportation (2,445 persons) functions.

TABLE 3-10
FOREIGN CONTRACTOR SUPPORT DURING ALPHA PHASE

Contractors	Number of personnel			
	Maint.	Supply	Trans.	Total
Abdullah A.M. Al-Khodari Est. (2)	0	0	a	a
Adil Al-Misehal (2)	0	0	a	a
Ahmad N. Albinali & Sons (2)	0	0	25	25
Al Askar Trading Est. (2)	0	0	a	a
Al Maqam Contracting (2)	0	0	a	a
Al Matrood Trading Est. (2)	0	0	a	a
Al Shamrany Metal Industries (2)	0	0	a	a
Al-Masarah LTD (2)	7	0	0	7
Al-Masarah LTD (2)	12	0	0	12
Ali Saleh Alamri Est. (2)	0	0	a	a
American President Lines (3)	0	0	50	50
Bandar International (2)	0	0	a	a
Dallah Transport Co. (2)	0	0	a	a
Farrell Lines (3)	0	0	40	40
Gulf Bridge Est. (2)	0	0	a	a
Humoud Ibrahim Al-ziab Co. LTD (2)	0	0	a	a
Ibrahim Al-Quatani Est. (2)	0	0	a	a
Lykes Lines (3)	0	0	40	40
Sealand (3)	0	0	50	50
Thyssen Henschel (1)	1	0	0	1
Total	20	0	2,445	2,465

Note: (1) = AMCCOM; (2) = ARCENT, and (3) = HQ MSC

* These 12 contractors provide a total of 2,240 personnel. A detailed breakout of the number of personnel by contractor was not available.

The ARCENT established contracts with 15 of the contractors, HQ MSC let 4 and AMCCOM let 1. Table 3-10 is coded to show these relationships. For details about the locations and functions performed, refer to Appendix C.

Department of the Army Civilians. Each of the five MSCs and the aggregate of installations, depots, and other organizations listed in Chapter 2 provided the DAC

personnel. Four hundred and sixty-one DACs provided support for maintenance (274 people) and supply (187 people). For details about the number of personnel, locations, and functions performed refer to Appendix C.

Where Was Support Provided?

U.S. Contractors. Table 3-11 shows that the 67 U.S. contractors provided permanent support at seven fixed locations and eighteen organizational locations. (Refer to Figure 3-2 for the location of each contractor on the battlefield.) Each fixed location had an average of 10.5 contractors permanently stationed there and each organizational location had 3. Dhahran, SA, was the fixed location with the largest number of permanent contractors (40) and the largest number of personnel (380).

TABLE 3-11

LOCATIONS WHERE U.S. CONTRACTORS PROVIDED SUPPORT DURING ALPHA PHASE

Fixed location	Organizational location
Abu Dhabi, UAE (P)	1st AD (P)
Ad Dammam, SA (P)	1st Cavalry (P) (T)
Al Jubail, SA (P) (T)	1st ID (P)
Dhahran, SA (P) (T)	11th ADA BDE (P)
Hafir Al Batin, SA (P)	12th AVN BDE (T)
KKMC, SA (P) (T)	101st ABN DIV (AA) (P) (T)
King Fahd AFB, SA (T)	124th MI BN (P)
Log base Alpha (T)	142d FA BDE (T)
Log base Bastogne, SA (T)	2d ACR (P) (T)
Log base Bravo (T)	2d AD (P)
Riyadh, SA (P) (T)	24th ID (P) (T)
Theater (T)	212th FA BDE (T)
	3d ACR (P) (T)
	3d AD (P)
	35th Sig BDE (P)
	82d ABD (P) (T)
	TF 8-43/32d ADCOM (P)
	III Corps Elements (P)
	VII Corps (P) (T)
	British (P)
	Egyptian (T)
	USMC (P) (T)
	Other (T)

Note: (P) = permanently stationed and (T) = temporarily stationed

The organizational location with the largest number of contractors and personnel was the 1st Cavalry with nine contractors and 65 people. Of the 799 U.S. contractor

personnel, 605 people were located at those seven fixed locations and the remaining 194 people were at the 18 organizational locations.

Contractors visited 9 fixed locations and 13 organizational locations over 485 times on a temporary basis. The average visit consisted of 4.5 people, lasted almost 1.5 days, and, at a fixed-location, involved almost 3 contractors; organizational-location visits involved 2.4 contractors.

Foreign Contractors. Sixteen of the 20 foreign contractors provided permanent support in the rear area. The fixed locations of Ad Dammam, SA, had two contractors, and log base Alpha had one contractor located there. The remaining contractor was stationed with the 1st Cavalry, an organizational location. (Refer to Figure 3-2 for the location of each contractor on the battlefield.) Of the 2,465 foreign contractor personnel, 2,420 people were in the rear area, 20 people were in fixed locations, and 25 people were at the single organizational location. We found no evidence to show that the foreign contractors visited any locations on a temporary basis to provide maintenance or supply support.

Department of the Army Civilians. The DACs provided permanent support at eight fixed locations and at two organizational locations. Table 3-12 lists those locations. Of the 461 DACs providing support, the largest contingent (380 people) was located at Ad Dammam, SA.

TABLE 3-12
LOCATIONS WHERE DEPARTMENT OF THE ARMY CIVILIANS PROVIDED
SUPPORT DURING ALPHA PHASE

Fixed location	Organizational location
Abu Dhabi, UAE (P) Ad Dammam, SA (P) Al Jubail, SA (T) Dhahran, SA (P) Log base Alpha (P) Log base Bastogne, SA (P) Log base Bravo (P) Log base Delta (P) Theater (P) (T)	24th ID (P) Other (P)

Note: (P) = permanently stationed, and (T) = temporarily stationed.

The DACs visited each of two fixed locations once on a temporary basis. The average visit consisted of 10 people and lasted 16 days.

What Support Was Provided?

U.S. Contractors. All but two of the 67 U.S. contractors provided some type of maintenance support. Altogether, they provided 180 separate instances of maintenance support at the various locations they served. Ninety-six of these instances were at fixed locations and the remaining 84 were at organizational locations. The type of maintenance support provided included organizational, through depot maintenance, modifications, deprocessing, training, and technical support. Technical support and training were the largest maintenance support subfunctions, with 67 and 44 instances provided, respectively. Twenty-two contractors provided 50 instances of supply support divided between the fixed locations (about 60 percent) and organizational locations (about 40 percent). Most of this support was in the Class IX support subfunction, with some assistance also being provided in the areas of technical support and fielding. The small number of contractors (six) who provided the nine instances of transportation support did so from fixed locations. (Refer to Table 3-13.)

Foreign Contractors. Sixteen of the foreign contractors provided support in the rear area. Each of those contractors provided truck driver support and two provided bus drivers. Each of the contracts required the contractor to provide a vehicle (e.g., a HET, lowboy, or bus) for the driver. Three contractors provided maintenance support at fixed locations; one of these three also provided supply support. The remaining contractor provided transportation support at an organizational location.

Department of the Army Civilians. The DACs provided maintenance support to all nine of the fixed locations they served; at eight of these, supply support was also included. Support was limited to maintenance at the two organizational locations served.

Phase Bravo – Movement of the Corps (16 January Through 22 February 1991)

Description

The air war began on 16 January with attacks on both tactical and strategic targets. Air superiority was gained immediately. During Phase Bravo, deployment

TABLE 3-13

**MAINTENANCE, SUPPLY, AND TRANSPORTATION PROVIDED
DURING ALPHA PHASE**

Functional area	U.S. contractors	Foreign contractors	DACs	Total
Maintenance	180	3	18	201
Organizational	4	0	0	4
DS	0	0	1	1
GS	0	0	0	0
Depot	16	0	2	18
ORG-DS	15	0	0	15
ORG-GS	30	0	0	30
ORG-Depot	24	0	0	24
DS-GS	5	0	0	5
DS-Depot	4	0	0	4
GS-Depot	8	0	1	9
AVUM	1	0	0	1
AVIM	8	0	0	8
AVUM-Depot	7	0	0	7
Modification	6	2	7	15
Deprocess	20	0	2	22
Training	44	1	1	46
Technical	67	1	2	70
Supply	50	1	12	63
Class II	0	0	0	0
Class III	1	0	0	1
Class IV	1	0	0	1
Class V	0	0	0	0
Class VII	0	0	0	0
Class IX	30	1	6	37
Fielding	9	0	2	11
Training	4	0	1	5
Technical	10	0	1	11
Installation	1	0	0	1
Transportation	9	17	0	26
Mode	1	0	0	1
Terminal	1	0	0	1
Offloading	0	0	0	0
Bus drivers	0	2	0	2
Truck drivers	0	17	0	17

Note: For this table, the number of subfunctional cases may not equal the number of functional cases. There are two reasons for this: first, a contractor may have performed more than one subfunction at a particular location; second, the information we received only indicated that the major function was performed.

of the major Army combat units ended. Army combat and supporting units carried out the realignment of forces, a crossing maneuver, to prepare for the ground attack on the Iraqi forces. The VII and XVIII Airborne Corps initiated its movements from its bases to its tactical assembly areas. Their green-suit logistics capability was repositioned to support the planned offensive. During times when the logistics infrastructure was relocated, the U.S. contractors mostly accompanied those units. This involved only about 20 percent of the U.S. contractor personnel and no foreign contractors or DACs. The COSCOMs continued their operations mostly from the log bases during this phase.

The remaining 80 percent of the U.S. contractors were substantially in the same locations as they were during the Alpha Phase. The only major difference in support was that the number of personnel grew by 25 percent at the established fixed locations. The foreign contractors continued their transportation support as in the initial phase supplemented by 500 additional drivers and related transportation equipment. The DAC locations remained essentially static, the same as during the Alpha Phase.

Figure 3-3 depicts the theater locations of fixed support sites, the combat units, the supporting logistic units and bases, and the physical locations of contractors.

Phase Summary

The Army had contracts with 90 companies to provide various types of maintenance, supply, and transportation support during the Bravo Phase. These contractors provided support by providing 3,882 people. Of these people, 945 worked for 71 U.S. contractors and 2,937 worked for 19 foreign contractors. Seven hundred and sixty-seven DACs also provided support during this phase. Contractors and DACs totaled 4,649 people divided among the maintenance (1,255 people), supply (454 people), and transportation (2,940 people) functions (refer to Table 3-14).

During this phase, contractors and DAC personnel provided support to 15 fixed locations, 21 organizational locations, and the rear area. United States contractors provided support to 14 of the 15 fixed locations and all of the organizational locations. Foreign contractors provided support to the rear area, to one fixed location, and to one organizational location.

TABLE 3-14

BRAVO PHASE SUMMARY

Personnel	Number	Fixed locations				Organizational locations				Rear area	Grand total
		Maint	Supply	Trans.	Total	Maint.	Supply	Trans.	Total	Trans.	
U.S.	71	592	148	15	755	180	10	0	190	0	945
Foreign	19	12	0	0	12	0	0	25	25	2 900	2 937
DACs	NA	471	296	0	767	0	0	0	0	0	767
Total	90	1 075	444	15	1 534	180	10	25	215	2 900	4 649

The DACs provided support at 12 fixed locations. The largest number of personnel (2,900) were stationed in the rear area. Of the remaining personnel, 1,534 were located at fixed locations and 215 at organizational locations. Ad Dammam, SA (with 791 people), and Dhahran, SA (with 472 people), were the fixed locations with the largest number of permanent personnel. The 1st Cavalry was the organizational location with the largest number (85) of personnel.

Seventy of the 71 U.S. contractors provided maintenance support during this phase. Also, 23 provided supply support, and 6 provided transportation support. Of the 19 foreign contractors, 18 provided transportation support and 1 provided maintenance support. The DACs support consisted of maintenance and supply. The weapon systems and end items supported during this phase are listed in Appendix F.

Who Provided Support?

U.S. Contractors. Table 3-15 shows the 71 U.S. contractors providing support during this phase and the personnel each furnished (by support area). Seven companies had multiple contracts: GTE Government Systems Corporation; General Dynamics Services Company; Lockheed Support Systems, Inc.; McDonnell Douglas Electronic Systems Company; and McDonnell Douglas Helicopter Company each had two contracts. Hughes Aircraft Company and Raytheon Corporation Missile Systems Division each had three contracts. The 945 people supplied by those contractors were divided among the maintenance (772 people), supply (158 people), and transportation (15 people) functions.

The AMC MSCs established contracts with 70 of the contractors; Fort Hood let one. Among the MSCs, AMCCOM let 3 contracts, ATCOM let 27, CECOM let 17.

TABLE 3-15

U.S. CONTRACTOR SUPPORT DURING THE BRAVO PHASE

Contractors	Number of personnel			
	Maint.	Supply	Trans.	Total
ARINC Research Corporation (3)	2	0	0	2
AYDIN Corporation (3)	1	0	0	1
Aeromaritime Mediterranean Corporation (2)	5	0	0	5
Allison Gas Turbine Division - GMC, Inc (2)	1	0	0	1
Automated Research Systems, Inc. (5)	0	7	0	7
Beech Aerospace Service, Inc. (2)	54	18	0	72
Bell Helicopter Textron, Inc. (2)	3	0	0	3
Boeing Helicopters, Inc. (2)	1	0	0	1
Brown International Corporation (4)	5	0	0	5
CCL, Inc. (3)	4	0	0	4
COBRO Corporation (2)	5	0	0	5
Cincinnati Electronics Corporation (3)	1	0	0	1
DynCorp (2)	180	61	0	241
Electronics & Space Corporation (5)	1	0	0	1
Everett Equipment, Inc. (5)	1	0	0	1
FMC Corporation (5)	7	0	0	7
GE Defense Systems Division (5)	3	0	0	3
GE-ASD, Inc. (5)	2	0	0	2
GTE Government Systems Corporation (3)	16	4	1	21
GTE Government Systems Corporation (3)	5	0	0	5
General Dynamics Land Systems Division (5)	26	8	0	34
General Dynamics Services Company (5)	98	4	8	110
General Dynamics Services Company (5)	53	23	3	79
General Electric Aerospace (3)	4	0	0	4
General Electric Company (2)	2	0	0	2
General Instruments (2)	2	0	0	2
Honeywell, Inc. (2)	2	0	0	2
Honeywell Military Avionics Division (1)	4	0	0	4
Howell, Inc. (2)	2	0	0	2
Hughes, Inc. (2)	2	0	0	2
Hughes Aircraft Company (1)	4	0	0	4
Hughes Aircraft Company (4)	2	0	0	2
Hughes Aircraft Company (5)	2	0	0	2
ITT, Inc. (2)	2	0	0	2
Johnson Controls World Services, Inc. (2)	22	7	0	29
Kaman Sciences Corporation (5)	4	0	0	4
Laguna Industries, Incorporated (3)	1	0	0	1
Librascope, Inc. (3)	2	0	0	2
Litton Data Systems (3)	1	0	0	1
Lockheed Support Systems, Inc. (6)	39	1	0	40
Lockheed Support Systems, Inc. (2)	27	0	0	27
Loral, Inc. (3)	4	0	0	4

Note: 1 = AWCOW, 2 = ATCOM, 3 = BECOM, 4 = WCOM, 5 = TACOM, and 6 = F. H. H. H.

TABLE 3-15

U.S. CONTRACTOR SUPPORT DURING THE BRAVO PHASE (Continued)

Contractors	Number of personnel			
	Maint.	Supply	Trans.	Total
MILTOPE Corporation (3)	5	1	0	6
Mack Trucks, Inc. (5)	1	0	0	1
ManTech Field Engineering Corporation (3)	29	3	0	32
Martin Marietta Corporation (2)	25	0	0	25
McDonnell Douglas Electronic Systems Company (4)	2	0	0	2
McDonnell Douglas Electronic Systems Company (4)	3	0	0	3
McDonnell Douglas Helicopter Company (2)	12	0	0	12
McDonnell Douglas Helicopter Company (2)	10	0	0	10
Motorola Incorporated (3)	2	0	0	2
Northrop, Inc. (2)	2	0	0	2
Oshkosh Truck Corporation (5)	1	0	0	1
Pentastar Electronics, Inc. (1)	2	1	0	3
Petroleum Helicopter Company (2)	1	0	0	1
Raytheon Corporation Missile Systems Division (4)	6	0	0	6
Raytheon Corporation Missile Systems Division (4)	1	0	0	1
Raytheon Corporation Missile Systems Division (4)	14	0	0	14
Rockwell International Corporation (3)	2	0	0	2
Rockwell Tactical Systems Division (4)	1	0	0	1
SERV-AIR, Inc. (3)	6	0	0	6
Sanders, Inc. (2)	2	0	0	2
Scientific Atlantic, Inc. (2)	2	0	0	2
Shorts Brothers, Inc. (2)	4	1	0	5
Sikorsky Aircraft Division (2)	3	0	0	3
Sikorsky International Products, Inc. (2)	15	15	0	30
TRI-EX Tower Corporation (3)	2	0	0	2
Task Research, Inc. (2)	2	0	0	2
Teledyne Continental Motors, Inc. (5)	2	0	0	2
Textron Lycoming, Inc. (5)	11	0	0	11
Willbros Butler Engineers, Inc. (2)	2	4	3	9
Total	772	158	15	945

Note: (1) = AMCCOM; (2) = ATCOM; (3) = CECOM; (4) = MICOM; (5) = TACOM; and (6) = Fort Hood

MICOM let 8, TACOM let 15, and Fort Hood let 1. Table 3-15 is annotated to show these relationships. For details about the locations and functions performed by the contractors associated with each MSC or Fort Hood, refer to Appendix C.

The range of personnel provided by each contractor varied greatly. Table 3-16 shows that more than 77 percent of all contractors provided 9 or fewer people and

only about 3 percent of the contractors provided more than 100 people. The average number of people provided by each contractor was slightly more than 13.

TABLE 3-16
RANGE OF U.S. CONTRACTOR PERSONNEL PROVIDED
DURING BRAVO PHASE

Range	Number of contractors
1 through 9	55
10 through 49	12
50 through 99	2
100 or more	2

Foreign Contractors. Table 3-17 shows the 19 foreign contractors who provided support during the Bravo Phase and the personnel each furnished (by support area). No contractor had multiple contracts. The 2,937 people were divided among the maintenance (12 people) and transportation (2,925 people) functions.

The ARCENT established contracts with 15 of the contractors and HQ MSC let 4. Table 3-17 is annotated to show these relationships. For details about the locations and functions performed, refer to Appendix C.

Department of the Army Civilians. ATCOM, MICOM, TACOM, and the aggregate of installations, depots, and other organizations listed in Chapter 2 provided the DAC personnel. Seven hundred and sixty-seven DACs provided support for the maintenance (471) and supply (296) functions. For details about the number of personnel, locations, and functions performed, refer to Appendix C.

Where Was Support Provided?

U.S. Contractors. Table 3-18 shows the fixed and organizational locations of the U.S. contractors. (Refer to Figure 3-3 for the location of each contractor on the battlefield.) Each fixed location had an average of 11 contractors permanently stationed there and each organizational location had 3. Dhahran, SA, was the fixed location with the largest number of permanent contractors (39) and the largest number of personnel (438 people). The organizational locations with the largest number of contractors were the 1st Cavalry Division and 24th ID. The 1st Cavalry Division had the largest number of personnel (60 people). Of the 945 U.S. contractor

TABLE 3-17

FOREIGN CONTRACTOR SUPPORT DURING BRAVO PHASE

Contractors	Number of personnel			
	Maint	Supply	Trans	Total
Abdullah A.M. Al-Khodari Est. (1)	0	0	a	a
Adil Al-Misehal (1)	0	0	a	a
Ahmad N. Albinali & Sons (1)	0	0	25	25
Al Askar Trading Est. (1)	0	0	a	a
Al Maqam Contracting (1)	0	0	a	a
Al Matrood Trading Est. (1)	0	0	a	a
Al Shamrany Metal Industries (1)	0	0	a	a
Al-Masarah LTD (1)	12	0	0	12
Al-Zhick Rullo Est. (1)	0	0	a	a
Ali Saleh Alamri Est. (1)	0	0	a	a
American President Lines (2)	0	0	115	115
Bandar International (1)	0	0	a	a
Dallah Transport Co. (1)	0	0	a	a
Farrell Lines (2)	0	0	50	50
Gulf Bridge Est. (1)	0	0	a	a
Humoud Ibrahim Al-ziab Co. LTD (1)	0	0	a	a
Ibrahim Al-Quatani Est. (1)	0	0	a	a
Lyke Lines (2)	0	0	50	50
Sealand (2)	0	0	115	115
Total	12	0	2,925	2,937

Note: (1) = ARCENT and (2) = HQ MSC.

* These 13 contractors provided a total of 2,570 personnel. A detailed breakout of the number of personnel by contractor was not available.

personnel, 775 people were located at these 8 fixed locations and the remaining 190 people were at the 17 organizational locations.

Contractors visited 11 fixed locations and 13 organizational locations over 380 times on a temporary basis. The average visit consisted of almost 1.5 people and lasted approximately 1.5 days and at both fixed locations and organizational locations, the visit involved three contractors.

Foreign Contractors. Seventeen of the 19 foreign contractors provided permanent support in the rear area. The log base Alpha and the organizational location 1st Cavalry Division each had one contractor. (Refer to Figure 3-3 for the location of each contractor on the battlefield.) Of the 2,937 foreign contractor personnel, 2,900 were located in the rear area, 12 were at a fixed location, and

TABLE 3-18

LOCATIONS WHERE U.S. CONTRACTORS PROVIDED SUPPORT DURING BRAVO PHASE

Fixed location	Organizational location
Abu Dhabi, UAE (P)	1st AD (P)
Ad Dammam, SA (P)	1st Cavalry (P) (T)
Al Jubail, SA (P) (T)	1st ID (P) (T)
Dhahran, SA (P) (T)	11th ADA BDE (P)
Hafir Al Batin, SA (P)	12th AVN BDE (T)
KKMC, SA (P) (T)	101st ABN DIV (AA) (T)
King Fahd AFB, SA (T)	142D FA BDE (T)
Log base Alpha (T)	2d ACR (P) (T)
Log base Bastogne, SA (T)	2d AD (P)
Log base Bravo (T)	24th ID (P) (T)
Log base Charlie (P) (T)	3d ACR (P) (T)
Log base Echo (T)	3d AD (P)
Riyadh, SA (P) (T)	35th Sig BDE (P)
Theater (T)	82d ABD (P) (T)
	TF 8-43/32d ADCOM (P)
	III Corps Elements (P)
	VII Corps (P) (T)
	British (P)
	Egyptian (T)
	USMC (P) (T)
	Other (P) (T)

Note: (P) = permanently stationed; and (T) = temporarily stationed.

25 were at an organizational location. We found no evidence to indicate that the foreign contractors visited locations on a temporary basis and provided maintenance or supply support.

Department of the Army Civilians. The DAC permanent support was limited to 11 fixed locations. (Refer to Table 3-19.) Of the 767 DACs providing support, the largest contingent (651 people) was located at Ad Dammam, SA.

DACs visited each of two fixed locations once on a temporary basis. The average visit consisted of 10 people and lasted 3 days.

What Support Was Provided?

U.S. Contractors. All but one of the 71 U.S. contractors provided some type of maintenance support. Altogether, they provided 199 separate instances of maintenance support at the various locations they served. One hundred and nine of

TABLE 3-19

**LOCATIONS WHERE DEPARTMENT OF THE ARMY CIVILIANS PROVIDED
SUPPORT DURING BRAVO PHASE**

Fixed location	Organizational location
Abu Dhabi, UAE (P) Ad Dammam, SA (P) Al Jubail, SA (T) KKMC, SA (P) Dhahran, SA (P) Log base Alpha (P) Log base Bastogne, SA (P) Log base Bravo (P) Log base Charlie (P) Log base Delta (P) Log base Echo (P) Theater (T)	NA

Note: (P) = permanently stationed; (T) = temporarily stationed, and NA = not applicable

these instances were at fixed locations and the remaining 99 were at organizational locations. The type of maintenance support provided included organizational, depot maintenance, modifications, deprocessing, training, and technical support. Technical support and training were the largest maintenance support subfunctions with 72 and 47 instances provided. Twenty-three contractors provided 57 cases of supply divided between the fixed locations (65 percent) and organizational (35 percent) locations. Most of this support was in the Class IX support subfunction, with some assistance also being provided in the areas of technical support and fielding. The small number of contractors (six) who provided the eight instances of transportation support did so from fixed locations. (Refer to Table 3-20.)

Foreign Contractors. Seventeen of the foreign contractors provided support in the rear area. Each of those contractors provided truck driver support and two provided bus drivers. Each of those contracts required the contractor to provide a vehicle (e.g., HET, Lowboy, or bus) for the driver. One contractor provided maintenance support at a fixed location. One contractor provided transportation support at an organizational location.

TABLE 3-20

**MAINTENANCE, SUPPLY, AND TRANSPORTATION PROVIDED
DURING BRAVO PHASE**

Functional area	U.S. contractors	Foreign contractors	DACs	Total
Maintenance	199	1	17	217
Organizational	4	0	0	4
DS	0	0	1	1
GS	0	0	0	0
Depot	17	0	1	18
ORG-DS	14	0	0	14
ORG-GS	27	0	0	27
ORG-Depot	29	0	0	29
DS-GS	8	0	0	8
DS-Depot	4	0	0	4
GS-Depot	8	0	2	10
AVUM	12	0	0	12
AVIM	17	0	0	17
AVUM-Depot	12	0	0	12
Modification	2	1	5	8
Deprocess	24	0	2	26
Training	47	0	1	48
Technical	72	0	1	73
Supply	57	0	16	73
Class II	0	0	0	0
Class III	1	0	0	1
Class IV	1	0	0	1
Class V	0	0	0	0
Class VII	0	0	0	0
Class IX	35	0	7	42
Fielding	12	0	2	14
Training	3	0	1	4
Technical	12	0	1	13
Installation	0	0	0	0
Transportation	8	18	0	26
Mode	1	0	0	1
Terminal	1	0	0	1
Offloading	0	2	0	0
Bus drivers	0	2	0	2
Truck drivers	0	18	0	18

Note: For this table, the number of subfunctional cases may not equal the number of functional cases. There are two reasons for this: first, a contractor may have performed more than one subfunction at a particular location; second, the information we received only indicated that the major function was performed.

Department of the Army Civilians. Maintenance support was provided at all 12 of the fixed locations that the DACs served. The only location that did not receive supply support was Al Jubail, SA, which was the sole temporary location during Bravo Phase.

Phase Charlie – Ground Offensive (23 February Through 28 February 1991)

Description

No additional major Army combat or logistical units arrived in the theater during the Charlie Phase. Seventy-one U.S. contractors using 969 predominantly U.S. personnel, eighteen foreign contractors employing 2,925 predominantly local and foreign personnel, along with 770 DACs provided maintenance, supply, and transportation support. However, only 34 (less than 1 percent) of the total number of civilian personnel were identified as having crossed the borders with Army combat or logistical units. All of these personnel were employed by U.S. contractors.

By the conclusion of the Charlie Phase, the U.S. contractors were located on the battlefield at 14 fixed locations, with 784 people, and with at least 18 operational Army field units using 185 people. Of the 14 fixed locations, 1 was located outside of Saudi Arabia, 7 were at cities or fixed sites in Saudi Arabia, 5 were at Army logistic bases in Saudi Arabia, and 1 was located at the theater level. The foreign contractors continued their transportation support as they had in the Bravo Phase. We found no indication that any of the foreign contractors crossed the border during this phase.

The DAC locations were fairly static; DACs occupied one less fixed location in the Charlie Phase than they did in the Bravo Phase.

Figure 3-4 shows the detailed theater locations of the U.S. contractors during this phase.

Phase Summary

The Army had contracts with 89 companies to provide various types of maintenance, supply, and transportation support during Charlie Phase. These contractors provided support by providing 3,894 people. Of these people, 969 worked for 71 U.S. contractors and 2,925 worked for 18 foreign contractors. Seven hundred and seventy DACs also provided support during this phase. Contractors and DACs

totaled 4,664 people divided among the maintenance (1,267), supply (457), and transportation (2,940) functions. (Refer to Table 3-21.)

During this phase, contractors and DAC personnel provided support to 15 fixed locations, 18 organizational locations and the rear Army area. United States contractors provided support to 14 of the 15 fixed locations and all of the organizational locations. Foreign contractors provided support to the area and to one organizational location. The largest number of personnel (2,900) were stationed in the rear area. Of the remaining personnel (i.e., contractors plus DACs), 1,554 were located at fixed locations and 210 were at organizational locations. Ad Dammam, SA (with 814 people), and Dhahran, SA (with 484 people), were the fixed locations with the largest number of permanent personnel. The 1st Cavalry Division was the organizational location with the largest number (84) of people.

Seventy of the 71 U.S. contractors provided maintenance support during this phase. Also, 23 contractors provided supply support and 6 provided transportation support. Support by the 18 foreign contractors was limited to the functional area of transportation. The DAC support included both maintenance and supply. The weapon systems and end items supported during this phase are listed in Appendix F.

The number of personnel who accompanied units into Iraq and Kuwait during the ground war was 34. These personnel were provided by U.S. contractors. Inside Iraq and Kuwait they provided support from 16 locations. (Refer to Figure 3-4 for additional details.)

Who Provided Support?

U.S. Contractors. Table 3-22 shows the 71 U.S. contractors providing support during this phase and the personnel each furnished (by support area). Seven companies had multiple contracts: GTE Government Systems Corporation; General Dynamics Services Company; Lockheed Support Systems, Inc.; McDonnell Douglas Electronic Systems Company; and McDonnell Douglas Helicopter Company each had two contracts. Hughes Aircraft and Raytheon Corporation Missile Systems Division each had three contracts. The 969 people supplied by those contractors were divided among the maintenance (795 people), supply (159 people), and transportation (15 people) functions.

TABLE 3-21
CHARLIE PHASE SUMMARY

Personnel	Number	Fixed locations				Organizational locations				Rear area	Grand total
		Maint.	Supply	Trans.	Total	Maint.	Supply	Trans.	Total	Trans.	
U.S.	71	620	149	15	784	175	10	0	185	0	969
Foreign	18	0	0	0	0	0	0	25	25	2,900	2,925
DACs	NA	472	298	0	770	0	0	0	0	0	770
Total	89	1,092	447	15	1,554	175	10	25	210	2,900	4,664

Note: NA = not applicable

TABLE 3-22
U.S. CONTRACTOR SUPPORT DURING THE CHARLIE PHASE

Contractors	Number of personnel			
	Maint.	Supply	Trans.	Total
ARINC Research Corporation (3)	2	0	0	2
AYDIN Corporation (3)	1	0	0	1
Aeromaritime Mediterranean Corporation (2)	5	0	0	5
Allison Gas Turbine Division - GMC (2)	1	0	0	1
Automated Research Systems, Inc. (5)	0	7	0	7
Beech Aerospace Service, Inc. (2)	62	20	0	82
Bell Helicopter Textron Inc. (2)	3	0	0	3
Boeing Helicopters, Inc. (2)	1	0	0	1
Brown International Corporation (4)	4	0	0	4
CCL, Inc. (3)	4	0	0	4
COBRO Corporation (2)	4	0	0	4
Cincinnati Electronics Corporation (3)	1	0	0	1
DynCorp, Inc. (2)	180	61	0	241
Electronics & Space Corp. (5)	1	0	0	1
Everett Equipment, Inc. (5)	1	0	0	1
FMC Corporation (5)	9	0	0	9
GE Defense Systems Division (5)	3	0	0	3
GE-ASD, Inc. (5)	2	0	0	2
GTE Government Systems Corporation (3)	16	4	1	21
GTE Government Systems Corporation (3)	5	0	0	5
General Dynamics Land Systems Division (5)	31	8	0	39
General Dynamics Services Company (5)	98	4	8	110
General Dynamics Services Company (5)	53	23	3	79
General Electric Aerospace, Inc. (3)	4	0	0	4
General Electric Company (2)	2	0	0	2
General Instruments, Inc. (2)	2	0	0	2

Note: (1) = AMCCOM, (2) = ATCOM, (3) = CECCOM, (4) = MICOM, (5) = TACOM, and (6) = Fort Hood

TABLE 3-22

U.S. CONTRACTOR SUPPORT DURING THE CHARLIE PHASE (Continued)

Contractors	Number of personnel			
	Maint.	Supply	Trans.	Total
Honeywell (2)	2	0	0	2
Honeywell Military Avionics Division (1)	4	0	0	4
Howell, Inc. (2)	2	0	0	2
Hughes, Inc. (2)	2	0	0	2
Hughes Aircraft Company (1)	4	0	0	4
Hughes Aircraft Company (4)	2	0	0	2
Hughes Aircraft Company (5)	2	0	0	2
ITT, Inc. (2)	2	0	0	2
Johnson Controls World Services, Inc. (2)	22	7	0	29
Kaman Sciences Corporation (5)	4	0	0	4
Laguna Industries, Incorporated (3)	1	0	0	1
Librascope, Inc. (3)	2	0	0	2
Litton Data Systems, Inc. (3)	1	0	0	1
Lockheed Support Systems, Inc. (6)	39	1	0	40
Lockheed Support Systems, Inc. (2)	27	0	0	27
Loral, Inc. (3)	4	0	0	4
MILTOPE Corporation (3)	5	1	0	6
Mack Trucks, Inc. (5)	1	0	0	1
ManTech Field Engineering Corporation (3)	29	3	0	32
Martin Marietta Corporation (2)	24	0	0	24
McDonnell Douglas Electronic Systems Company (4)	2	0	0	2
McDonnell Douglas Electronic Systems Company (4)	3	0	0	3
McDonnell Douglas Helicopter Company (2)	13	0	0	13
McDonnell Douglas Helicopter Company (2)	10	0	0	10
Motorola Incorporated (3)	2	0	0	2
Northrop, Inc. (2)	1	0	0	1
Oshkosh Truck Corporation (5)	1	0	0	1
Pentastar Electronics, Inc. (1)	2	1	0	3
Petroleum Helicopter Company (2)	1	0	0	1
Raytheon Corporation Missile Systems Division (4)	6	0	0	6
Raytheon Corporation Missile Systems Division (4)	1	0	0	1
Raytheon Corporation Missile Systems Division (4)	14	0	0	14
Rockwell International Corporation (3)	2	0	0	2
Rockwell Tactical Systems Division (4)	4	0	0	4
SERV-AIR, Inc. (3)	11	0	0	11
Sanders, Inc. (2)	1	0	0	1
Scientific Atlantic, Inc. (2)	2	0	0	2
Shorts Brothers, Inc. (2)	6	1	0	7
Sikorsky Aircraft Division (2)	3	0	0	3

Note: (1) = AVCOM, (2) = ATCOM, (3) = CECOM, (4) = MICOM, (5) = TACOM, and (6) = Fort Hood

TABLE 3-22

U.S. CONTRACTOR SUPPORT DURING THE CHARLIE PHASE (Continued)

Contractors	Number of personnel			
	Maint.	Supply	Trans.	Total
Sikorsky International Products, Inc. (2)	15	15	0	30
TRI-EX Tower Corporation (3)	2	0	0	2
Task Research, Inc. (2)	1	0	0	1
Telecyne Continental Motors, Inc. (5)	2	0	0	2
Textron Lycoming, Inc. (5)	14	0	0	14
Willbros Butler Engineers, Inc. (2)	2	3	3	8
Total	795	159	15	969

Note: (1) = AMCCOM; (2) = ATCOM; (3) = CECOM; (4) = MICOM; (5) = TACOM; and (6) = Fort Hood

The AMC MSCs established contracts with 70 of the contractors: Fort Hood let one. Among the MSCs, AMCCOM let 3, ATCOM let 27, CECOM let 17, MICOM let 8, TACOM let 15, and Fort Hood let one. Table 3-22 is annotated to show these relationships. For details about the locations and functions performed by the contractors associated with each MSC or Fort Hood, refer to Appendix C.

The range of personnel provided by each contractor varied greatly. Table 3-23 shows that more than 76 percent of all contractors provided 9 or fewer people and only about 3 percent of the contractors provided more than 100 people. The average number of people provided by each contractor was slightly more than 13.5.

TABLE 3-23

RANGE OF U.S. CONTRACTOR PERSONNEL PROVIDED
DURING CHARLIE PHASE

Range	Number of contractors
1 through 9	54
10 through 49	13
50 through 99	2
100 or more	2

Foreign Contractors. Table 3-24 shows a complete listing of the 18 foreign contractors who provided support during Charlie Phase and the personnel each

furnished (by support area). No contractor had multiple contracts. All of the 2,925 personnel provided worked in the transportation area.

TABLE 3-24
FOREIGN CONTRACTOR SUPPORT DURING CHARLIE PHASE

Contractors	Number of personnel			
	Maint.	Supply	Trans.	Total
Abdullah A.M. Al-Khodari Est. (1)	0	0	a	a
Adil Al-Misehal (1)	0	0	a	a
Ahmad N. Albinali & Sons (1)	0	0	25	25
Al Askar Trading Est. (1)	0	0	a	a
Al Maqam Contracting (1)	0	0	a	a
Al Matrood Trading Est. (1)	0	0	a	a
Al Shamrany Metal Industries (1)	0	0	a	a
Al-Zhick Rullo Est. (1)	0	0	a	a
Ali Saleh Alamri Est. (1)	0	0	a	a
American President Lines (2)	0	0	115 ^a	115 ^a
Bandar International (1)	0	0	115 ^a	115 ^a
Dallah Transport Co. (1)	0	0	a	a
Farrell Lines (2)	0	0	50	50
Gulf Bridge Est. (1)	0	0	a	a
Humoud Ibrahim Al-ziab Co. LTD (1)	0	0	a	a
Ibrahim Al-Quatani Est. (1)	0	0	a	a
Lyke Lines (2)	0	0	50	50
Sealand (2)	0	0	115	115
Total	0	0	2,925	2,925

Note: (1) = ARCENT, (2) = HQ MSC

^a These 13 contractors provided a total of 2,570 personnel. A detailed breakout of the number of personnel by contractor was not available.

The ARCENT established contracts with 14 of the contractors and HQ MSC let 4. Table 3-24 is annotated to show these relationships. For details on the locations and functions performed, refer to Appendix C.

Department of the Army Civilians. The ATCOM, MICOM, TACOM, and the aggregate of installations, depots, and other organizations listed in Chapter 2 provided the DAC personnel. Seven hundred and seventy DACs provided support for the maintenance (472) and supply (298) functions.

Where Was Support Provided?

U.S. Contractors. Table 3-25 shows the 71 U.S. contractors who provided permanent support at 9 fixed locations and 17 organizational locations. (Refer to

Figure 3-4 for the location of each contractor on the battlefield.) Each fixed location had an average of nine contractors permanently stationed there and each organizational location had three. Dhahran, SA, was the fixed location with the largest number of permanent contractors (39) and personnel (445). The organizational location with the largest of contractors was the 24th ID. The 1st Cavalry Division had the largest number of personnel (59). Of the 969 U.S. contractor personnel, 784 were located at these 9 fixed locations and the remaining 185 personnel were at the 17 organizational locations.

TABLE 3-25

LOCATIONS WHERE U.S. CONTRACTORS PROVIDED SUPPORT DURING CHARLIE PHASE

Fixed location	Organizational location
Ahu Dhabi, UAE (P)	1st AD (P) (T)
Ad Dammam, SA (P)	1st Cavalry (P) (T)
Al Jubail, SA (P)(T)	1st ID (P)
Dhahran, SA (P)	11th ADA BDE (P) (T)
Hafir Al Batin, SA (P)	101st ABN DIV (AA) (T)
KKMC, SA (P) (T)	2d ACR (P)
King Fahd AFB, SA (P) (T)	2d AD (P)
Log base Alpha, SA (T)	24th ID (P)
Log base Bastogne, SA (T)	3d ACR (P)
Log base Bravo, SA (T)	3d AD (P)
Log base Charlie, SA (P) (T)	82d ABD (P)
Log base Echo, SA (T)	TF 8-43/32d ADCOM (P)
Riyadh, SA (P)	III Corps Elements (P)
Theater (T)	VII Corps (P) (T)
	XVIII Airborne Corps (P) (T)
	British (P)
	Other (P) (T)
	USMC (P) (T)

Note: P = permanently stationed and (T) = temporarily stationed

Contractors visited nine fixed locations and eight organizational locations over 40 times on a temporary basis. The average visit consisted of 1.4 people, lasted approximately 1.5 days, and by both fixed locations and organizational location visits involved 1.4 contractors.

Thirty-six people from 10 U.S. contractors crossed the border into Iraq and Kuwait with military units during the ground war. For specific details, refer to Chapter 2.

Foreign Contractors. Seventeen of the 18 foreign contractors provided permanent support in the rear area. The organizational location 1st Cavalry Division had one contractor. To see where the contractors were actually located in the theater, refer to Figure 3-4. Two thousand nine hundred of the 2,925 foreign contractor personnel were located in the rear area; 25 were at an organizational location. These contractors did not visit any location on a temporary basis.

There is no evidence to indicate that foreign contractor personnel crossed the border into Iraq and Kuwait during the ground war.

Department of the Army Civilians. The DACs permanent support was limited to 11 fixed locations (refer to Table 3-26). Of the 770 DACs providing support, the largest contingent (650 people) was located at Ad Dammam, SA. The DACs visited one fixed location once on a temporary basis. The average visit consisted of one person and lasted 1 day. No evidence indicates that DACs crossed the border into Iraq and Kuwait during the ground war.

TABLE 3-26

LOCATIONS WHERE DEPARTMENT OF THE ARMY CIVILIANS PROVIDED
SUPPORT DURING CHARLIE PHASE

Fixed location	Organizational location
Abu Dhabi, UAE (P) Ad Dammam, SA (P) Dhahran, SA (P) KKMC, SA (P) (P) Log base Alpha, SA (P) Log base Bastogne, SA (P) Log base Bravo, SA (P) Log base Delta, SA (P) Log base Charlie, SA (P) Log base Echo, SA (P) Theater Army Area (P) (P)	NA

Note: (P) = permanently stationed, (T) = temporarily stationed, and NA = not applicable

What Support Was Provided?

U.S. Contractors. All but one of the 71 U.S. contractors provided some type of maintenance support. Altogether, they provided 169 separate instances of maintenance support at the various locations they served. Ninety-four of these

instances were at fixed locations and the remaining 66 were at organizational locations. The type of maintenance support provided included organizational, through depot maintenance, modifications, deprocessing, training, and technical support. Technical support and training were the largest maintenance subfunctions of support with 47 and 42 instances provided. Twenty-three contractors provided 52 instances of supply divided between the fixed locations (66 percent) and organizational locations (33 percent) support. Most of this support was in the Class IX support subfunction. The small number of contractors (six) who provided the nine instances of transportation support did so from fixed locations (refer to Table 3-27).

Foreign Contractors. Seventeen of the foreign contractors provided transportation support in the rear area. Each of those contractors provided truck driver support and two provided bus drivers. Each of those contracts required the contractor to provide a vehicle (e.g., a HET, Lowboy, or bus) for the driver. The remaining contractor provided transportation support at an organizational location.

Department of the Army Civilians. Maintenance and supply support was provided to all 11 of the fixed locations that the DACs served.

CONCLUSIONS

This chapter shows that from the time the first U.S. soldier landed in the ODS/S theater of operation, contractor and DAC support started in earnest. The Army units in the theater needed specialized maintenance and supply support. That need was met through contractors and DACs who were made available almost exclusively by the Army's "wholesale system." Of the 76 U.S. contractors who provided that type of support, only 1 was not contracted for through the wholesale system.

The Army's transportation effort, which was the linchpin of ODS S logistical operations, received a substantial boost from foreign contractors. Without the 2,900 foreign contractor personnel who were driving contractor-furnished buses and trucks, the ability of the logistical community to meet the requirements of the "war fighters" would have been in doubt. Both contractors and DACs were key team players who contributed mightily to the overall success of ODS S.

TABLE 3-27

**NUMBER OF CASES WHERE FUNCTIONAL AREA SUPPORT WAS PROVIDED
DURING CHARLIE PHASE**

Functional area	U.S. contractors	Foreign contractors	DACs	Total
Maintenance	160	0	14	174
Organizational	4	0	0	4
DS	0	0	0	0
GS	0	0	0	0
Depot	15	0	1	16
ORG-DS	12	0	0	12
ORG-GS	25	0	0	25
ORG-Depot	25	0	0	25
DS-GS	5	0	0	5
DS-Depot	4	0	0	4
GS-Depot	8	0	2	10
AVUM	3	0	0	3
AVIM	4	0	0	4
AVUM-Depot	14	0	0	14
Modification	3	0	2	5
Deprocess	17	0	1	18
Training	32	0	0	32
Technical	47	0	1	48
Supply	52	0	15	67
Class II	0	0	0	0
Class III	0	0	0	0
Class IV	0	0	0	0
Class V	0	0	0	0
Class VII	1	0	0	1
Class IX	34	0	7	41
Fielding	8	0	1	9
Training	3	0	0	3
Technical	12	0	1	13
Installation	0	0	0	0
Transportation	9	18	0	27
Mode	1	0	0	1
Terminal	1	0	0	1
Offloading	0	0	0	0
Bus drivers	0	2	0	2
Truck drivers	0	18	0	18

Note: For this table the number of subfunctional cases may not equal the number of functional cases. There are two reasons for this: first, a contractor may have performed more than one subfunction at a particular location; second, the information we received only indicated that the major function was performed.

APPENDIX A

SCOPE, PARAMETERS, METHODOLOGY, FOREIGN CONTRACTOR RESEARCH THRESHOLDS, AND STUDY LIMITATIONS

SCOPE, PARAMETERS, METHODOLOGY, FOREIGN CONTRACTOR RESEARCH THRESHOLDS, AND STUDY LIMITATIONS

INTRODUCTION

This appendix provides the scope of the study, the parameters that were established, the methodology that we employed, the research thresholds that were applied, and the limitations necessary to the conduct of the study. These features were approved by the Department of the Army (DA) Office of the Deputy Chief of Staff for Logistics (ODCSLOG) subsequent to an in-process review conducted for the DCSLOG on 18 September 1992. They are included as a matter of record for the study.

SCOPE

The scope of this study was defined by the sponsor as follows:

Determine the extent and location of contractor supply, maintenance, and transportation support provided in the Persian Gulf theater during Operation Desert Shield/Desert Storm. Identify who they were, what they did, when they did it, and where. To the extent that time and resources permit, include cost and effectiveness.

To the extent possible, make a similar determination as to the use of DA civilians.

PARAMETERS

The parameters established for this study were as follows:

- Concentrate on contractor and Department of the Army Civilian (DAC) locations, time frames, identification, and missions.
- Address the functions of
 - ▶ supply (Classes II, III, IV, V, VII, and IX);
 - ▶ maintenance [organization, direct support (DS), general support (GS), special repair activity, (SRA), and depot]; and
 - ▶ transportation (node and terminal operations).
- Include local and out-of-country contractors.

- Concentrate on buildup phases, D-G day and the G-day cease fire, with an emphasis on the 100-hour ground campaign.
- Include host nation support where contracted for.
- Exclude the functions of services, subsistence, medical, engineering, and minor in-country contracts.
- Exclude legal or doctrinal issues.
- Exclude contractor-versus-"green suit"/organic-organization issues.

METHODOLOGY

To acquire the information required for this study, we used a number of different techniques, including literature reviews, interviews, and questionnaires. The literature reviewed included Army Operation Desert Shield/Storm (ODS/S) "after action" reports, "lessons learned reports," contractor records, operating procedures, and historical records. Also, numerous commercial and professional publications were examined. Appendix B summarizes the documents researched.

Interviews were conducted in person or by telephone with key Army logisticians who held positions during ODS/S. Thirty-three interviews were conducted. Appendix B lists the names and ODS/S positions of the individuals interviewed.

The data gathered from our literature search and interviews were supplemented with data we obtained from questionnaires. Those questionnaires were designed to fill the voids that still existed after the interviews and literature search were concluded. Questionnaires were sent to each of the Army Materiel Command major subordinate commands, to selected Logistic Assistance Officers (LAOs) and logistic assistance representatives (LARs) (who served in Southwest Asia during the operations), and to most of the U.S. contractors who provided personnel. When necessary, follow-on telephone interviews were completed to clarify the information received earlier.

Using the data gathered, a data base was created to serve as the basis for this study. The detailed data base information is contained in Volume 2 of this report. Because of its size, it is published separately. Its distribution is limited.

FOREIGN CONTRACTOR RESEARCH THRESHOLDS

During our research of foreign contract files, we encountered a tremendous volume of data. Thresholds for review of the in-country contracts had to be established. Therefore, the following thresholds, supplementing the parameters used to account for U.S. contractors, were established for foreign contractors:

- The value of the contract must be greater than \$100,000. (For example, we eliminated from review contracts for minor local equipment maintenance, e.g., the rewinding of an alternator for a 2 ½-ton truck.) This dollar amount coincided with the amount established by the Army during ODS/S, as the threshold between local and large purchases in theater.
- Contracts must have had personnel involved in managing, moving, or maintaining. [For example, we eliminated from our review contracts for supplies (e.g., batteries, tires, lumber, office supplies, and the provision of rental vehicles without drivers).]
- Contracts for which the delivery of the material was a condition of the purchase were excluded. (For example, the procurement of bottled water with delivery included in the price.)

STUDY LIMITATIONS

As our research progressed, it became apparent that we needed to limit our study effort to satisfy the DCSLOG's objectives. First, we did not include the LAR contribution as part of the DAC effort because we viewed them as both an integral peacetime and wartime facet of the CONUS-based and deployed Army operational units. The LARs were not deployed to perform tasks over and above their normal missions, whereas the DACs we examined did perform missions beyond their normal duties. We should point out, however, that this omission is not intended to cast any doubt on, what by all accounts was judged as, extraordinary performance of duty by all LAOs and LARs. Second, because of the age, complexity, and redundancy of the data available, the accuracy of the information cannot be guaranteed 100 percent. However, the data that were collected and are presented in this report accurately reflect reality. In those instances where conflicting data existed, or different time frames were employed, the data we judged the most accurate were always used.

APPENDIX B

**KEY ARMY INDIVIDUALS INTERVIEWED AND DOCUMENTS
RESEARCHED**

KEY ARMY INDIVIDUALS INTERVIEWED AND DOCUMENTS RESEARCHED

PERSONNEL INTERVIEWED AND ODS/S POSITION

MG Coburn – DCG, 22d SUPCOM

MG Robison – DCG, 22d SUPCOM

BG Brown – DCG Readiness, 22d SUPCOM and CDR AMC-SWA

BG Guest – DCG OPS, 22d SUPCOM

BG Link – CDR, 16th CSG

BG McFarlin – CDR, 2d COSCOM

BG Monroe – G4 ARCENT

BG Whaley – DCG TRANS, 22d SUPCOM

BG Zierdt – CDR, 1st COSCOM

COL Andrews – G4 1st ID

COL Bartlett – Head of ARCENT Contracting

COL Beauchamp – CDR, 101st CSG

COL Bird – CDR, MFT-SA

COL Bryant – CDR, 82nd DISCOM

COL Eby – CDR, 3rd AD DISCOM

COL Ehlinger – ARCENT Contracting

COL Fousek – CDR, 1st CAV DISCOM

COL Gerald – CDR, 101st DISCOM

COL Hill – DEP G4, ARCENT
COL King – CDR, 24th DISCOM
COL Kirby – ASG-Rear
COL Langenus – CDR, 318th Transportation Agency
COL Lytle – Head AMC LAO-SWA
COL Martinous – CDR, ASG-SWA
COL Metzger – CDR, 1st AD DISCOM
COL Porter – AC of S SPO, 2d COSCOM
COL Ritter – CDR, 593d ASG
COL Shadley – CDR, 1st ID DISCOM
LTC Byrne – DCDR, 711th TRANS Group Provisional
LTC Nemetsky – CDR, F/227 AVIM – 1st CAV
MAJ DeBruyne – MFT-SA
MAJ Radin – CDR, 47th FSB – 1st AD
MAJ Smith – MFT-SA

DOCUMENTS RESEARCHED

HQDA Lessons Learned
AMC Lessons Learned
ODCSLOG Deployment Lessons
ODCSLOG Sustainment Publication
FORSCOM AAR/Lessons Learned
AMC MSC AARs/MSF Forward AARs
ARCENT AAR

22d TAACOM AAR

1st COSCOM AAR

DISCOM AARs

ARCENT Contract Files

XVIII Airborne Corps Contract Files

U.S. Army Center for Military History Files

U.S. Army Center for Lessons Learned Files

Various professional/commercial publications

APPENDIX C

**SUMMARY OF CONTRACTORS BY ARMY MATERIEL COMMAND
MAJOR SUBORDINATE COMMANDS AND OTHER CONTRACTING
OFFICES, BY PHASE**

**SUMMARY OF CONTRACTORS BY ARMY MATERIEL COMMAND
MAJOR SUBORDINATE COMMANDS AND OTHER CONTRACTING
OFFICES, BY PHASE**

TABLE C-1

U.S. CONTRACTORS - ARMAMENT, MUNITIONS, AND CHEMICAL COMMAND

	Initial Phase 8 Aug 90 - 31 Oct 90	Alpha Phase 1 Nov 90 - 15 Jan 91	Bravo Phase 16 Jan 91 - 22 Feb 91	Charlie Phase 23 Feb 91 - 28 Feb 91
Contractors	3	5	3	3
Personnel	6	14	11	11
Functions	Maintenance Modifications Organizational depot Training Supply Fielding	Maintenance Deprocessing Organizational depot Technical training Supply Fielding Technical	Maintenance Deprocessing Organizational depot Technical Supply Fielding	Maintenance Deprocessing Organizational depot Technical Supply Fielding

TABLE C-2

U.S. CONTRACTORS - AVIATION AND TROOP COMMAND

	Initial Phase 8 Aug 90 - 31 Oct 90	Alpha Phase 1 Nov 90 - 15 Jan 91	Bravo Phase 16 Jan 91 - 22 Feb 91	Charlie Phase 23 Feb 91 - 28 Feb 91
Contractors	22	23	27	27
Personnel	263	378	499	506
Functions	Maintenance AVUM-depot Deprocessing Organizational-depot Technical Training Supply Class III-P Class IV Class IX Transportation Mode Terminal	Maintenance AVUM-depot Modifications Organizational-depot Technical Training Supply Class III-P Class IV Class IX Transportation Mode Terminal	Maintenance AVUM-depot Modifications Organizational-depot Technical Training Supply Class III-P Class IV Class IX Transportation Mode Terminal	Maintenance AVUM-depot Modifications Organizational-depot Technical Training Supply Class VII Class X Transportation Mode Terminal

Note: AVUM = Aviation Unit Maintenance

TABLE C-3

U.S. CONTRACTORS - COMMUNICATIONS AND ELECTRONICS COMMAND

	Initial Phase 8 Aug 90 - 31 Oct 90	Alpha Phase 1 Nov 90 - 15 Jan 91	Bravo Phase 16 Jan 91 - 22 Feb 91	Charlie Phase 23 Feb 91 - 28 Feb 91
Contractors	7	18	17	17
Personnel	51	90	96	101
Functions	Maintenance Deprocessing Modifications Organizational-depot Technical Training Supply Class IX Transportation	Maintenance AVIM Organizational-depot Technical assistance Training Supply Class IX Technical Training Transportation	Maintenance AVIM Organizational-depot Technical assistance Training Supply Class IX Technical Training Transportation	Maintenance AVIM Organizational-depot Technical assistance Training Supply Class IX Technical Training Transportation

Note: AVIM = Aviation Intermediate Maintenance

TABLE C-4

U.S. CONTRACTORS - FORT HOOD

	Initial Phase 8 Aug 90 - 31 Oct 90	Alpha Phase 1 Nov 90 - 15 Jan 91	Bravo Phase 16 Jan 91 - 22 Feb 91	Charlie Phase 23 Feb 91 - 28 Feb 91
Contractors		1	1	1
Personnel	40	40	40	40
Functions	Maintenance AVUM-depot Supply Class IX	Maintenance AVUM-depot Supply Class IX	Maintenance AVUM-depot Supply Class IX	Maintenance AVUM-depot Supply Class IX

TABLE C-5

U.S. CONTRACTORS - MISSILE COMMAND

	Initial Phase 8 Aug 90 - 31 Oct 90	Alpha Phase 1 Nov 90 - 15 Jan 91	Bravo Phase 16 Jan 91 - 22 Feb 91	Charlie Phase 23 Feb 91 - 28 Feb 91
Contractors	5	9	9	9
Personnel	20	36	38	38
Functions	Maintenance Organizational-depot Training	Maintenance Organizational-depot Training	Maintenance AVUM-AVIM Organizational-depot Training Technical assistance Supply	Maintenance AVUM-AVIM Organizational-depot Training Technical assistance Supply

TABLE C-6

U.S. CONTRACTORS - TANK AUTOMOTIVE COMMAND

	Initial Phase 8 Aug 90 - 31 Oct 90	Alpha Phase 1 Nov 90 - 15 Jan 91	Bravo Phase 16 Jan 91 - 22 Feb 91	Charlie Phase 23 Feb 91 - 28 Feb 91
Contractors	4	13	15	15
Personnel	142	241	265	275
Functions	Maintenance Organizational-DS Technical assistance Supply Class IX Transportation	Maintenance Organizational-depot Technical assistance Deprocessing Training Supply Class IX Technical Training Transportation	Maintenance Deprocessing Modifications Organizational-depot Technical assistance Training Supply Class IX Fielding Technical Training Transportation	Maintenance Deprocessing Modifications Organizational-depot Technical assistance Training Supply Class IX Fielding Technical Training Transportation

Note: DS = Direct Support

TABLE C-7

FOREIGN CONTRACTORS - ARMY CENTRAL COMMAND, XVIII AIRBORNE CORPS ARMAMENT, MUNITIONS, AND CHEMICAL COMMAND

	Initial Phase 8 Aug 90 - 31 Oct 90	Alpha Phase 1 Nov 90 - 15 Jan 91	Bravo Phase 16 Jan 91 - 22 Feb 91	Charlie Phase 23 Feb 91 - 28 Feb 91
Contractors	10	20	19	18
Personnel	883	2,465	2,937	2,925
Functions	Maintenance Technical Training Supply Class IX Transportation Bus drivers Truck drivers	Maintenance Technical Training Supply Class IX Transportation Bus drivers Truck drivers	Transportation Bus drivers	Transportation Bus drivers Truck drivers

APPENDIX D

**CONTRACTORS AND DEPARTMENT OF THE ARMY
CIVILIANS BY LOCATION**

CONTRACTORS AND DEPARTMENT OF THE ARMY CIVILIANS BY LOCATION

Through a series of tables, this appendix shows the contractors or Department of the Army Civilians (DACs) who provided support at each fixed location, organizational location, or Corps Rear/Theater Army area by phase. The tables are ordered by phase. Table D-1 lists all of the tables. Table D-2 contains the description of each abbreviation found in the report header. For Tables D-3 through D-7, D-9 through D-13, D-15 through D-19, and D-21 through D-26 show the following information:

- The locations from which the contractor or DAC support was provided during the phase.
- The contractors who provided support at each location. This is only shown on those tables involving contractors.
- The number of permanently and temporarily stationed U.S and foreign contractors at each location. This is also only shown on those tables involving contractors.
- The number of instances that a functional area was performed by the contractors or DACs at the location.
- The number of permanent personnel broken down by functional area.
- The number of temporary personnel broken down by functional area.

Tables D-8, D-14, D-20, D-22, and D-26 are summary tables for each phase; they display the same information shown in the other tables except they do not list the contractors. Each table uses the same format.

TABLE D-1
LISTINGS OF TABLES

Table	Title
Table D-2	Abbreviation Descriptions
Table D-3	Initial Phase – Contractors at Fixed Locations
Table D-4	Initial Phase – Contractors at Organizational Locations
Table D-5	Initial Phase – DACs at Fixed Locations
Table D-6	Initial Phase – DACs at Organizational Locations
Table D-7	Initial Phase – Contractors in Rear Areas
Table D-8	Initial Phase – Summary
Table D-9	Alpha Phase – Contractors at Fixed Locations
Table D-10	Alpha Phase – Contractors at Organizational Locations
Table D-11	Alpha Phase – DACs at Fixed Locations
Table D-12	Alpha Phase – DACs at Organizational Locations
Table D-13	Alpha Phase – Contractors in Rear Areas
Table D-14	Alpha Phase – Summary
Table D-15	Bravo Phase – Contractors at Fixed Locations
Table D-16	Bravo Phase – Contractors at Organizational Locations
Table D-17	Bravo Phase – DACs at Fixed Locations
Table D-18	Bravo Phase – DACs at Organizational Locations
Table D-19	Bravo Phase – Contractors in Rear Areas
Table D-20	Bravo Phase – Summary
Table D-21	Charlie Phase – Contractors at Fixed Locations
Table D-22	Charlie Phase – Contractors at Organizational Locations
Table D-23	Charlie Phase – DACs at Fixed Locations
Table D-24	Charlie Phase – DACs at Organizational Locations
Table D-25	Charlie Phase – Contractors in Rear Areas
Table D-26	Charlie Phase – Summary

TABLE D-2
ABBREVIATION DESCRIPTIONS

Abbreviation	Description
FIXED LOCATION ORGANIZATIONAL LOCATION SUB-ORGANIZATIONAL/FIXED LOCATION	Number of fixed location where support was provided Name of the organizational location where support was provided Specific activity at the fixed or organizational location where support was provided
CONTRACTORS: UNITED STATES (U.S.) = (P) FOREIGN (FN) = (T)	Number of contractors <i>permanently</i> stationed at the location providing support Number of contractors <i>temporarily</i> stationed at the location providing support
FUNCTIONS PERFORMED: MAINT SUPPLY TRANS TOTAL	Number of instances where maintenance was performed at the location. An instance can be either permanent or temporary support Number of instances where supply was performed at the location Number of instances where transportation was performed at the location Total number of instances where support was performed at the location
PERMANENT PERSONNEL: MAINT SUPPLY TRANS TOTAL	Number of personnel who were permanently stationed at the location providing maintenance support Number of personnel who were permanently stationed at the location providing supply support Number of personnel who were permanently stationed at the location providing transportation support Total number of personnel who were permanently stationed at the location providing support
TEMPORARY PERSONNEL: MAINT SUPPLY TRANS TOTAL	Number of personnel who were temporarily stationed at the location providing maintenance support Number of personnel who were temporarily stationed at the location providing supply support Number of personnel who were temporarily stationed at the location providing transportation support Total number of personnel who were temporarily stationed at the location providing support

TABLE D-3
INITIAL PHASE - CONTRACTORS AT FIXED LOCATIONS

FIXED LOCATIONS	SUN-ORGANIZATIONAL/FIXED LOCATION	CONTRACTORS						FUNCTIONS PERFORMED						PERMANENT PERSONNEL						TEMPORARY PERSONNEL					
		US			FN			MAINT			SUPPLY			MAINT			SUPPLY			MAINT			SUPPLY		
		P	T	I	P	T	I	P	T	I	P	T	I	P	T	I	P	T	I	P	T	I	P	T	I
AC 101-101-101	TAMP B-39	4	0	0	0	0	0	4	1	0	0	0	0	32	4	0	0	0	0	0	0	0	0	0	0
	Hanna Army Military Avionics Division																								
	Johnson Controls World Services, Inc.																								
	Martin Marietta Corporation																								
AC 101-101-101	McDonnell Douglas Electronic Systems																								
	NA	4	0	1	0			5	4	2				95	7	9				0	0	0	0	0	0
	General Dynamics Services Company (2)																								
	Pontiac Electronics, Inc.																								
AC 101-101-101	Tartron Licensing																								
	Thyssen Henschel																								
	TACMIS RSC	1	0	0	0			1	0	0				1	0	0				0	0	0	0	0	0
	CCL Inc																								
SUB TOTAL		5	0	1	0			6	4	2				96	7	9				0	0	0	0	0	0
AC 101-101-101	NA	0	1	0	0			1	1	1				0	0	0				1	0	1	0	1	2
	Willros Butler Engineers, Inc.																								
	NA	5	1	0	0			6	0	0				10	0	0				1	0	0	0	0	1
	General Dynamics Land Systems Division																								
AC 101-101-101	General Electric Aerospace																								
	GE Government Systems Corporation																								
	McDonnell Douglas Electronic Systems																								
	Raytheon Corporation Missile Systems (2)																								
AC 101-101-101	A/5m Quartermaster Group	1	0	0	0			1	1	1				0	0	2				0	0	0	0	0	0
	Willros Butler Engineers, Inc.																								
	TECOM SRA	1	0	0	0			1	0	0				6	0	0				0	0	0	0	0	0
	SE RV AIR Inc																								
AC 101-101-101	Rankin SRA #1	1	0	0	0			1	1	0				13	1	0				0	0	0	0	0	0
	ManTech Field Engineering Corporation																								
	TAMP Forward																								
	Beech Aerospace Service, Inc.	19	0	0	0			19	4	0				162	48	0				0	0	0	0	0	0
AC 101-101-101	Ball Helicopter Traction Inc																								
	Bowling & Hawkopters																								
	CORPO Corporation																								

TABLE D-3 INITIAL PHASE - CONTRACTORS AT FIXED LOCATIONS													
FIXED LOCATIONS	SUB-ORGANIZATIONAL/FIXED LOCATION	CONTRACTORS				FUNCTIONS PERFORMED				PERMANENT PERSONNEL			
		US	FN	FN	FN	MAINT	SUPPLY	TRANS	TOTAL	MAINT	SUPPLY	TRANS	TOTAL
	DynCorp General Electric Company General Instruments Honeywell Howell Hughes IIT McDonnell Douglas Helicopter Company Northrop Raytheon Helicopter Company Sanders Scientific Atlantic Sikorsky Aircraft Division Sikorsky International Products, Inc. Task Force	27	1	0	0	28	6	1	35	191	49	2	242
	SUB-TOTAL												
	NA	3	3	0	0	6	1	1	8	23	10	0	33
	GTE Government Systems Corporation McDonnell Douglas Helicopter Company Raytheon Corporation Missile Systems SAIC, Inc. Sikorsky International Products, Inc. Williams Butler Engineers, Inc.	0	1	0	0	1	0	0	1	0	0	0	1
	NA												
	Raytheon Tactical Systems Division												
	NA	0	1	0	0	1	0	1	2	0	0	0	1
	Williams Butler Engineers, Inc.												
	NA	2	2	0	0	3	0	1	4	2	0	0	2
	GTE Government Systems Corporation Raytheon Corporation Missile Systems (2) Williams Butler Engineers, Inc.												
	NA	0	1	0	0	1	0	0	1	0	0	0	1
	McDonnell Douglas Electronic Systems												

TABLE D-3 INITIAL PHASE - CONTRACTORS AT FIXED LOCATIONS																
FIXED LOCATIONS	CONTRACTORS				FUNCTIONS PERFORMED				PERMANENT PERSONNEL				TEMPORARY PERSONNEL			
	US P	US T	FN P	FN T	MAINT	SUPPLY	TRANS	TOTAL	MAINT	SUPPLY	TRANS	TOTAL	MAINT	SUPPLY	TRANS	TOTAL
SUB-ORGANIZATIONAL/FIXED LOCATION																
TOTAL	41	10	1	0	51	13	71	71	324	70	11	425	7	0	4	11

TABLE D-4 INITIAL PHASE - CONTRACTORS AT ORGANIZATIONAL LOCATIONS													
FIXED LOCATIONS	ORGANIZATIONAL LOCATION	CONTRACTORS				FUNCTIONS PERFORMED				PERMANENT PERSONNEL			
		US		FN		MAINT	SUPPLY	TRANS	TOTAL	MAINT	SUPPLY	TRANS	TOTAL
		P	T	P	T								
1st CAW Wright-Patterson AFB, OH	Bell Helicopter Textron Inc.	4	3	0	0		3	1	11	50	5	1	65
	General Dynamics Services Company (2)												
	GTE Government Systems Corporation												
	Lockheed Support Systems, Inc.												
	Pentastar Electronics, Inc.												
	Textron Lycoming												
	11th AFA BDE	2	0	0	0	2	0	0	2	2	0	0	2
	Raytheon Corporation Missile Systems (2)												
	12th AVN BDE	0	1	0	0	1	0	0	1	0	0	0	1
	Bell Helicopter Textron Inc.												
101st AAD Wright-Patterson AFB, OH	Bell Helicopter Textron Inc.	1	1	0	0	2	1	0	3	2	1	0	3
	General Dynamics Services Company												
	124th MIBN	1	0	0	0	1	0	0	1	5	0	0	5
	Performac Research, Inc.												
	24th ID	2	3	0	0	5	0	0	5	0	0	0	0
	Bell Helicopter Textron Inc.												
	General Dynamics Services Company												
	FMC Corporation												
	Pentastar Electronics, Inc.												
	Textron Lycoming												
3rd ACR Wright-Patterson AFB, OH	Bell Helicopter Textron Inc.	2	3	0	0	5	1	0	6	6	1	0	7
	General Dynamics Services Company (2)												
	Pentastar Electronics, Inc.												
	Textron Lycoming												
	CH2M	0	3	0	0	3	1	0	4	0	0	0	0
	DynCorp												
	Montech Field Engineering Corporation												
	McDonnell Douglas Helicopter Company												

TABLE D-4 INITIAL PHASE - CONTRACTORS AT ORGANIZATIONAL LOCATIONS															
FIXED LOCATIONS	ORGANIZATIONAL LOCATION	CONTRACTORS			FUNCTIONS PERFORMED			PERMANENT PERSONNEL			TEMPORARY PERSONNEL				
		US P	US T	FN I	MAINT	SUPPLY	TRANS	TOTAL	MAINT	SUPPLY	TRANS	MAINT	SUPPLY	TRANS	TOTAL
		12	14	0	0	26	6	1	33	83	7	1	21	0	21
TOTAL	TOTAL														

TABLE D-5 INITIAL PHASE - DACS AT FIXED LOCATIONS															
FIXED LOCATION	SUB-ORGANIZATIONAL/FIXED LOCATION	CONTRACTORS			FUNCTIONS PERFORMED			PERMANENT PERSONNEL			TEMPORARY PERSONNEL			TOTAL	
		US P	US T	FN T	MAINT	SUPPLY	TRANS	TOTAL	MAINT	SUPPLY	TRANS	MAINT	SUPPLY		TRANS
Algeria, Algeria (LAE)	TAMP BCS9				1		0	2	2	2	0	4	0	0	0
Algeria, Algeria (LAE)	ASCS SWA				1		0	2	1	8	0	9	0	0	0
Algeria, Algeria (LAE)	TAMP Forward				1		0	2	9	8	0	17	0	0	0
TOTAL	TOTAL	0	0	0	3	3	0	6	12	18	0	30	0	0	0

TABLE D-6 INITIAL PHASE - DACS AT ORGANIZATIONAL LOCATIONS													
FIXED LOCATION	ORGANIZATIONAL LOCATION	CONTRACTORS			FUNCTIONS PERFORMED			PERMANENT PERSONNEL			TEMPORARY PERSONNEL		
		US	FN	FN	MAINT	SUPPLY	TRANS	MAINT	SUPPLY	TRANS	MAINT	SUPPLY	TRANS
NA	NA				0	0	0	0	0	0	0	0	0
NA	NA	0	0	0	0	0	0	0	0	0	0	0	0

TABLE D-8 INITIAL PHASE - SUMMARY														
LOCATIONS	CONTRACTORS/DACS	CONTRACTORS			FUNCTIONS PERFORMED			PERMANENT PERSONNEL			TEMPORARY PERSONNEL			TOTAL
		US	FN	T	MAINT	SUPPLY	TRANS	MAINT	SUPPLY	TRANS	MAINT	SUPPLY	TRANS	
DEPT ORGANIZATIONAL	CONTRACTORS	41	10	1	0	51	13	7	71	344	70	11	425	11
	CONTRACTORS	12	14	0	0	26	6	1	33	83	7	1	91	21
	SUB-TOTAL	53	24	1	0	77	19	8	104	427	77	12	516	32
DEPT ORGANIZATIONAL	DACS	0	0	0	0	3	3	0	6	12	18	0	30	0
	DACS	0	0	0	0	0	0	0	0	0	0	0	0	0
	SUB-TOTAL	0	0	0	0	3	3	0	6	12	18	0	30	0
DEPT HEAD/ HEAD ARMY AREA	CONTRACTORS	0	0	0	0	0	0	9	9	0	0	882	882	0
TOTAL	TOTAL	53	24	10	0	80	27	17	119	479	95	894	1428	32

TABLE D-9 ALPHA PHASE - CONTRACTORS AT FIXED LOCATIONS														
FIXED LOCATION	SUB-ORGANIZATION/FIXED LOCATION	CONTRACTORS			FUNCTIONS PERFORMED			PERMANENT PERSONNEL			TEMPORARY PERSONNEL			TOTAL
		U.S.	FN	FN	MAINT	SUPPLY	TRANS	MAINT	SUPPLY	TRANS	MAINT	SUPPLY	TRANS	
Al Udeid, UAE	TAMIP Base	6	0	0	0	0	0	50	5	0	0	0	0	0
	Honeywell Military Avionics Division													
	Johnson Controls World Services, Inc.													
	Martin Marietta Corporation													
	McDonnell Douglas Electronic Systems													
	McDonnell Douglas Helicopter Company													
	Rockwell International Corporation													
	NA	2	0	2	0	4	3	50	13	11	0	0	0	0
	Al Mersath LTD													
	General Dynamics Services Company (2)													
Al Dhahran, SA	Thyssen Henschel													
	ASC SWA	1	0	0	0	1	0	2	0	0	0	0	0	0
	Textron Lycoming													
	MFT SA	9	0	0	0	8	5	36	14	0	0	0	0	0
	Automated Research Systems													
	FMC Corporation													
	General Dynamics Land Systems													
	GE ASD													
	GE Defense Systems Division													
	Hughes Aircraft Company (2)													
Al Jufail, SA	Pentastar Electronics, Inc.													
	Textron Lycoming													
	TAC MIS RSC	1	0	0	0	1	0	2	0	0	0	0	0	0
	CCL Inc.													
	SUB TOTAL	13	0	2	0	14	8	80	27	11	0	0	0	0
	NA													
	Brill Helicopter Textron Inc.													
	General Dynamics Land Systems Division													
	Litton Data Systems													
	Wilbur Butler Engineers, Inc.													
USMC	General Dynamics Land Systems	0	1	0	0	0	1	0	0	0	0	0	1	0

TABLE D-9 ALPHA PHASE - CONTRACTORS AT FIXED LOCATIONS													
FIXED LOCATION	SUB-ORGANIZATIONAL/FIXED LOCATION	CONTRACTORS			FUNCTIONS PERFORMED			PERMANENT PERSONNEL			TEMPORARY PERSONNEL		
		US	FN	FN	MAINT	SUPPLY	TRANS	MAINT	SUPPLY	TRANS	MAINT	SUPPLY	TRANS
	SUB TOTAL	3	2	0	0	4	4	4	0	0	1	2	0
	NA	8	3	0	0	10	2	26	1	0	5	0	0
	Chrom Nuclear Systems, Inc.												
	Everett Equipment, Inc.												
	General Dynamics Land Systems Division												
	General Electric Aerospace												
	GTE Government Systems Corporation (2)												
	Honeywell Military Avionics Division												
	Local Vought Systems Inc.												
	McDonnell Douglas Electronics Systems												
	Rohmco Corporation Missile Systems												
	Rocketwell Tactical Systems Division												
	475th Quarter Master Group	1	0	0	0	1	1	2	2	3	0	0	0
	Willros Butler Engineers, Inc.												
	AMC SWA	2	0	0	0	2	2	2	0	0	0	0	0
	Mack Truck, Inc.												
	Cyprus Truck Corporation												
	CECOM SIA	10	0	0	0	10	2	24	1	0	0	0	0
	ARINC Research Corporation												
	AYDIN Corporation												
	Liquid Industries, Incorporated												
	Librascope												
	Loral												
	MILTOP Corporation												
	Motrola Incorporated												
	SERV AIR Inc.												
	Teledyne Continental Motors												
	TREX Tower Corporation												
	Rainbow SPA #1	1	0	0	0	1	0	16	1	0	0	0	0
	Mantech Field Engineering Corporation												
	RAVIO Forward	18	0	0	0	18	3	236	66	0	0	0	0
	Beech Aerospace Service, Inc.												
	Beech Helicopters												

TABLE D-9 ALPHA PHASE - CONTRACTORS AT FIXED LOCATIONS													
FIXED LOCATION	SUB-ORGANIZATIONAL/FIXED LOCATION	CONTRACTORS				FUNCTIONS PERFORMED				PERMANENT PERSONNEL			
		US	US	FN	FN	MAINT	SUPPLY	TRANS	TOTAL	MAINT	SUPPLY	TRANS	TOTAL
	CCIRKO Corporation												
	DynCorp												
	General Electric Company												
	General Instruments												
	Honeywell												
	Howell												
	Hughes												
	ITT												
	McDonnell Douglas Helicopter Company												
	Northrop												
	Petroleum Helicopter Company												
	Sanders												
	Scientific Atlantic												
	Sikorsky Aircraft Division												
	Sikorsky International Products, Inc.												
	Task Research												
	SUB TOTAL	40	3	0	0	42	11	3	56	306	71	3	380
	NA												
Hall A Bldg, SA	Rockwell Tactical Systems Division	1	0	0	0	1	0	0	1	1	0	0	1
	NA												
KKMC, SA	GTE Government Systems Corporation (3)	4	6	0	0	10	2	2	14	19	14	1	34
	Logana Industries, Incorporated												
	McDonnell Douglas Helicopter Company												
	Raytheon Corporation Missile Systems												
	Rockwell International												
	SEIV AIR Inc												
	Sikorsky International Products, Inc.												
	Wilbur Butler Engineers, Inc.												
	CECOM Forward	1	0	0	0	1	0	0	1	1	0	0	1
	ALMNC Research Corporation												
	RAINBOW SDA #2	1	0	0	0	1	1	0	2	3	1	0	4
	ManTech Field Engineering Corporation												
	SUB TOTAL	6	6	0	0	12	3	2	17	23	15	1	39
	NA	0	0	0	0	1	0	0	1	0	0	0	1
King Edwards AFB, SA	NA												

TABLE D-9 ALPHA PHASE - CONTRACTORS AT FIXED LOCATIONS													
FIXED LOCATION	SUB-ORGANIZATIONAL/FIXED LOCATION	CONTRACTORS				FUNCTIONS PERFORMED				PERMANENT PERSONNEL			
		US P	US T	FN P	FN T	MAINT	SUPPLY	TRANS	TOTAL	MAINT	SUPPLY	TRANS	TOTAL
Long Beach Air Force Base, CA	McDonnell Douglas Helicopter Company												
	NA	0	3	1	0	4	1	0	5	12	0	0	12
	AI Masarrah Ltd												
	Loguna Industries, Incorporated												
	SE RV AIR Inc												
Long Beach Helicopters, CA	Wilbur Butler Engineers, Inc.												
	NA	0	1	0	0	1	0	1	2	0	0	0	0
	Wilbur Butler Engineers, Inc.												
	NA												
	Wilbur Butler Engineers, Inc.												
Long Beach Brown, CA	Wilbur Butler Engineers, Inc.												
	NA	0	1	0	0	1	1	0	2	0	0	0	0
	Wilbur Butler Engineers, Inc.												
	NA												
	Wilbur Butler Engineers, Inc.												
Long Beach, CA	NA	5	2	0	0	6	0	1	7	7	0	0	7
	CCL Inc												
	GTE Government Systems Corporation												
	Hughes Aircraft Company												
	Ryanair Corporation Missile Systems (?)												
Inglewood, CA	Rockwell Tactical Systems Division												
	Wilbur Butler Engineers, Inc.												
	NA	0	7	0	0	7	2	0	9	0	0	0	0
	GTE Government Systems Corporation												
	Loguna Industries, Incorporated												
TOTAL	McDonnell Douglas Helicopters, Inc.												
	AI Masarrah Ltd												
	Loguna Industries, Incorporated												
	SE RV AIR Inc												
	Wilbur Butler Engineers, Inc.												
TOTAL		74	26	3	0	99	31	9	139	492	118	15	625

TABLE D-10 ALPHA PHASE - CONTRACTORS AT ORGANIZATIONAL LOCATIONS													
FIXED LOCATION	ORGANIZATIONAL LOCATION	CONTRACTORS				FUNCTIONS PERFORMED				PERMANENT PERSONNEL			
		US P	US T	FN P	FN T	MAINT	SUPPLY	TRANS	TOTAL	MAINT	SUPPLY	TRANS	TOTAL
	1st AD General Dynamics Land Systems General Dynamics Services Company (2) Textron Lycoming	4	0	0	0	4	2	0	6	16	1	0	17
	1st CAV Altimad N. A. Binali & Sons HMC Corporation GE ASD GE Defense Systems Division General Dynamics's Land Systems (2) General Dynamics Services Company (2) Gile Government Systems Corporation Hughes Aircraft Company Lockheed Support Systems, Inc. MITOPE Corporation Pentastar Electronics, Inc. Textron Lycoming	9	4	1	0	13	3	1	17	63	2	25	90
	1st ID General Dynamics Land Systems General Dynamics Services Company Textron Lycoming	3	0	0	0	3	1	0	4	5	1	0	6
	11th ADA BDE Raytheon Corporation Missile Systems (3)	3	0	0	0	3	0	0	3	4	0	0	4
	12th AVN BDE Bell Helicopter Textron Inc.	0	1	0	0	1	0	0	1	0	0	0	0
	101st AAD A/HNC Research Corporation Bell Helicopter Textron Inc. General Dynamics Service Company	1	2	0	0	3	1	0	4	2	1	0	3
	124th Mi BN Potomac Research, Inc.	1	0	0	0	1	0	0	1	5	0	0	5

TABLE D-10 ALPHA PHASE - CONTRACTORS AT ORGANIZATIONAL LOCATIONS													
FIXED LOCATION	ORGANIZATIONAL LOCATION	CONTRACTORS				FUNCTIONS PERFORMED				PERMANENT PERSONNEL			
		US		FN		MAINT		TRANS		MAINT		TRANS	
		P	T	P	T	P	T	P	T	P	T	P	T
	1421FA BDE ALINC Research Corporation	0	1	0	0	1	0	0	0	0	0	1	0
	2nd ACIR Automated Research Systems Bell Helicopter Textron Inc C1 Defense Systems Division General Dynamics Land Systems General Dynamics Services Company (2) Hughes Aircraft Company Textron Lycoming	4	4	0	0	7	2	0	0	9	1	0	2
	2nd AD General Dynamics Services Company GTE Government Systems Corporation	2	0	0	0	2	0	0	0	9	0	0	0
	24th ID ALINC Research Corporation Bell Helicopter Textron Inc GE ASD General Dynamics Land Systems (2) General Dynamics Services Company (3) FMC Corporation Plantastor Electronics, Inc Textron Lycoming	7	4	0	0	10	3	0	0	21	1	0	0
	212th FA BDE Lord Vought Systems Inc. (2)	0	2	0	0	2	0	0	0	0	0	14	0
	3rd ACIR Bell Helicopter Textron Inc FMC Corporation GE ASD General Dynamics Land Systems (2) General Dynamics Services Company (2) Plantastor Electronics, Inc Textron Lycoming	6	3	0	0	9	2	0	0	11	1	0	0

TABLE D-10 ALPHA PHASE - CONTRACTORS AT ORGANIZATIONAL LOCATIONS													
FIXED LOCATION	ORGANIZATIONAL LOCATION	CONTRACTORS				FUNCTIONS PERFORMED				PERMANENT PERSONNEL			
		US	FN	FN	FN	MAINT	SUPPLY	TRANS	TOTAL	MAINT	SUPPLY	TRANS	TOTAL
Ray xth, SA	3rd AD General Dynamics Services Company (?) GTE Government Systems Corporation Textron Licensing	4	0	0	0	4	1	0	5	14	1	0	15
	35th Sq BDI GTE Government Systems Corporation	1	0	0	0	1	0	0	1	3	0	0	3
	82nd ABD AI/INC Research Corporation Bell Helicopter Textron Inc. General Dynamics Services Company	2	1	0	0	3	1	0	4	3	1	0	4
	1st 8 43/32 ADCOM Raytheon Corporation Missile Systems	1	0	0	0	1	0	0	1	2	0	0	2
	III Corps Elements GTE Government Systems Corporation	1	0	0	0	1	0	0	1	3	0	0	3
	VII Corps AI/INC Research Corporation CCL Inc.	1	1	0	0	2	0	0	2	1	0	0	1
	British General Dynamics Services Company	1	0	0	0	1	1	0	2	2	1	0	3
	Encryption AI/INC Research Corporation	0	1	0	0	1	0	0	1	0	0	0	0
	OTHER DynCorp Loral Vought Systems Inc. ManTech Field Engineering Corporation McDonnell Douglas Helicopter Company	0	4	0	0	4	1	0	5	0	0	0	0

TABLE D-10 ALPHA PHASE - CONTRACTORS AT ORGANIZATIONAL LOCATIONS													
FIXED LOCATION	ORGANIZATIONAL LOCATION	CONTRACTORS				FUNCTIONS PERFORMED				PERMANENT PERSONNEL			
		US P	US T	FN P	FN T	MAINT	SUPPLY	TRANS	TOTAL	MAINT	SUPPLY	TRANS	TOTAL
	USMC	4	3	0	0	7	2	0	9	5	3	0	8
	General Dynamics Land Systems												
	General Dynamics Services Company												
	GTE Government Systems												
	Liton Data Systems (3)												
	Textron Lycoming												
TOTAL		55	31	1	0	84	20	1	105	182	56	2	219

TABLE D-11 ALPHA PHASE - DACS AT FIXED LOCATIONS																	
FIXED LOCATION	SUB-ORGANIZATIONAL/FIXED LOCATION	CONTRACTORS				FUNCTIONS PERFORMED				PERMANENT PERSONNEL			TEMPORARY PERSONNEL			TOTAL	
		US P	US T	FN P	FN T	MAINT	SUPPLY	TRANS	TOTAL	MAINT	SUPPLY	TRANS	TOTAL	MAINT	SUPPLY		TRANS
Adm (Dental Unit)	TAMP Base					1		0	2	6	5	0	11	0	0	0	0
Adm (Dental Unit)	ASG SWA					1		0	2	130	100	0	230	0	0	0	0
Adm (Dental Unit)	MIT SA					1		0	2	90	60	0	150	0	0	0	0
Adm (Dental Unit)	SUB-TOTAL					2		0	4	220	160	0	380	0	0	0	0
Adm (Dental Unit)	NA					1		0	1	0	0	0	0	19	0	0	19
Adm (Dental Unit)	AMC SWA					1		0	2	8	1	0	9	0	0	0	0
Adm (Dental Unit)	TAMP Forward					1		0	2	13	13	0	26	0	0	0	0
Adm (Dental Unit)	SUB-TOTAL					2		0	4	21	14	0	35	0	0	0	0
Log Base Alpha	NA					1		0	2	2	2	0	4	0	0	0	0
Log Base Beta	NA					1		0	2	2	2	0	4	0	0	0	0
Log Base Gamma	NA					1		0	2	2	2	0	4	0	0	0	0
Log Base Delta	NA					1		0	2	2	2	0	4	0	0	0	0
Log Base Epsilon	NA					5		0	8	9	0	0	9	0	1	0	1
TOTAL		0	0	0	0	15		0	27	264	187	0	451	19	1	0	20

ALPHA PHASE - DACS AT ORGANIZATIONAL LOCATIONS													
FIXED LOCATION	ORGANIZATIONAL LOCATION	CONTRACTORS			FUNCTIONS PERFORMED			PERMANENT PERSONNEL			TEMPORARY PERSONNEL		
		US	FN	FN	MAINT	SUPPLY	TRANS	MAINT	SUPPLY	TRANS	MAINT	SUPPLY	TRANS
	24th ID				2	0	0	6	0	0	0	0	0
	OTHER				1	0	0	4	0	0	0	0	0
TOTAL	TOTAL	0	0	0	3	0	0	10	0	0	0	0	0

TABLE D-13 ALPHA PHASE - CONTRACTORS AT CORPS REAR/THEATER AREA													
FIXED LOCATION	ORGANIZATIONAL LOCATION	CONTRACTORS				FUNCTIONS PERFORMED				PERMANENT PERSONNEL			
		US P	US T	FN P	FN T	MAINT	SUPPLY	TRANS	TOTAL	MAINT	SUPPLY	TRANS	TOTAL
	NA	0	0	16	0	0	0	0	16	0	0	0	0
	Abdullah A M Al Khodari Est												
	Adil Al Misbah												
	Ali Saleh Akanni Est												
	Al Askar Trading Est												
	Al Mawqam Contracting												
	Al Shuraym Matrit Industries												
	Al Matrood Trading Est												
	American Presidential Lines												
	Bondar International												
	Dallah Transport Co												
	Farrill Lines												
	Gulf Bridge Est												
	Hammad Ibrahim Al zabi Co LTD												
	Ibrahim Al Qudatani Est												
	Lykos Lines												
	Sad and												
TOTAL		0	0	16	0	0	0	0	16	0	0	0	0

TABLE D-14 ALPHA PHASE - SUMMARY													
LOCATION	CONTRACTORS/DACS	CONTRACTORS				FUNCTIONS PERFORMED				PERMANENT PERSONNEL			
		US P	US T	FN P	FN T	MAINT	SUPPLY	TRANS	TOTAL	MAINT	SUPPLY	TRANS	TOTAL
FIELD ORGANIZATIONAL	CONTRACTORS	74	26	3	0	59	31	7	139	492	118	15	625
	DACS	55	31	1	0	84	20	1	105	182	12	25	219
	SUB TOTAL	129	57	4	0	183	51	10	244	674	130	40	844
FIELD ORGANIZATIONAL	CONTRACTORS	0	0	0	0	15	12	0	27	264	187	0	451
	DACS	0	0	0	0	3	0	0	3	10	0	0	10
	SUB TOTAL	0	0	0	0	18	12	0	30	274	187	0	461
CORPUS AGT THE ARMY AIR A	CONTRACTORS	0	0	16	0	0	0	16	16	0	0	2420	2436
	DACS	0	0	0	0	0	0	0	0	0	0	0	0
	SUB TOTAL	0	0	16	0	0	0	16	16	0	0	2420	2436
TOTAL	TOTAL	129	57	20	0	201	63	26	290	948	317	2460	3725

TABLE D-15 BRAVO PHASE - CONTRACTORS AT FIXED LOCATIONS																	
FIXED LOCATION	SUB-ORGANIZATIONAL/FIXED LOCATION	CONTRACTORS				FUNCTIONS PERFORMED				PERMANENT PERSONNEL				TEMPORARY PERSONNEL			
		US P	US T	FN P	FN T	MAINT	SUPPLY	TRANS	TOTAL	MAINT	SUPPLY	TRANS	TOTAL	MAINT	SUPPLY	TRANS	TOTAL
Ad Dammam, SA	TIME BASE	8	0	0	0	8	2	0	10	72	8	0	80	0	0	0	0
	COBRO Corporation																
	Harveywell Military Avionics Division																
	Johnson Controls World Services, Inc.																
	Martin Marietta Corporation																
	McDonnell Douglas Electronic Systems																
	McDonnell Douglas Helicopter Company																
	Rockwell International Corporation																
	Shorts Brothers																
	NA	2	0	0	0	2	2	2	6	57	17	11	85	0	0	0	0
Ad Dammam, SA	General Dynamics Services Company (2)																
	ASG-3WA	1	0	0	0	1	0	0	1	2	0	0	2	0	0	0	0
	Torxon Lycoming																
	MET SA	9	0	0	0	8	5	0	13	35	16	0	51	0	0	0	0
	Automated Research Systems																
	FMC Corporation																
	General Dynamics Land Systems																
	GE-ASD																
	GE Defense Systems Division																
	Hughes Aircraft Company (2)																
Al Jubail, SA	Panfaster Electronics, Inc.																
	Torxon Lycoming																
	TACNIS RSC	1	0	0	0	1	0	0	1	2	0	0	2	0	0	0	0
	CC, Inc.																
	SUB-TOTAL	13	0	0	0	12	7	2	21	96	33	11	140	0	0	0	0
	NA	2	1	0	0	3	2	0	5	2	0	0	2	1	1	0	2
	General Dynamics Land Systems Division																
	Litton Data Systems																
	Willros Butler Engineers, Inc.																
	NA	5	2	0	0	7	2	0	9	17	0	0	17	4	0	0	4
Ad Dammam, SA	Brown International Corporation																
	Everett Equipment, Inc.																

TABLE D-15

BRAVO PHASE - CONTRACTORS AT FIXED LOCATIONS

FIXED LOCATION	SUB-ORGANIZATIONAL/FIXED LOCATION	CONTRACTORS				FUNCTIONS PERFORMED				PERMANENT PERSONNEL				TEMPORARY PERSONNEL			
		P	U	S	T	P	I	FN	FN	MAINT	SUPPLY	TRANS	TOTAL	MAINT	SUPPLY	TRANS	TOTAL
	General Electric Aerospace GTE Government Systems Corporation (2) Raytheon Corporation Missile Systems Rockwell Tactical Systems Division	1	0	0	0	0	0	0	0	1	1	1	3	2	4	3	9
	4/5th Quarter Master Group Whitcomb Engineering, Inc.	2	0	0	0	0	0	0	0	2	2	2	6	2	0	0	2
	AMC SWA Mack Truck, Inc. Oshkosh Truck Corporation	11	0	0	0	0	0	0	0	11	1	0	12	25	1	0	26
	CECOM SPA ARINC Research Corporation AYDIN Corporation Cincinnati Electronics Corporation Logan Industries, Incorporated Librascope Loral MILTOPE Corporation Motorola Incorporated SERV AIR Inc. Telfordyne Continental Motors TRI EX Tower Corporation																
	Rainbow SIA #1 Mantech Field Engineering Corporation	1	0	0	0	0	0	0	0	1	1	0	2	15	1	0	16
	TAMP Forward Aeromarine Mediterranean Corporation Beech Aerospace Service, Inc. Boeing Helicopters COBRO Corporation DynCorp General Electric Company General Instruments Honeywell Howell Hughes ITT McDonnell Douglas Helicopter Company	19	0	0	0	0	0	0	0	19	3	0	22	284	84	0	368

TABLE D-15

BRAVO PHASE - CONTRACTORS AT FIXED LOCATIONS

FIXED LOCATION	SUB-ORGANIZATIONAL/FIXED LOCATION	CONTRACTORS				FUNCTIONS PERFORMED			PERMANENT PERSONNEL			TEMPORARY PERSONNEL		
		US	FN	FN	FN	MAINT	SUPPLY	TRANS	MAINT	SUPPLY	TRANS	MAINT	SUPPLY	TRANS
	Northrop													
	Petroleum Helicopter Company													
	Sanders													
	Scientific Atlantic													
	Skorsky Aircraft Division													
	Skorsky International Products, Inc.													
	Task Research													
	SUB-TOTAL	39	2	0	0	41	10	3	345	90	3	438	4	0
Hofft AFB, SA	NA													
	Seal Helicopter Testron Inc.	1	0	0	0	1	1	0	2	0	0	2	0	0
KKMC, SA	NA	7	7	0	0	14	5	1	50	15	1	66	10	1
	Brown International Corporation													
	General Dynamics Services Company													
	GTE Government Systems Corporation (2)													
	Honeywell Military Avionics Division													
	Laguna Industries Incorporated													
	Lockheed Support Systems, Inc.													
	McDonnell Douglas Helicopter Company													
	Raytheon Corporation Missile Systems (2)													
	Rockwell International Corporation													
	SERV AIR Inc.													
	Skorsky International Products, Inc.													
	Williams Butler Engineers, Inc.													
	CECOM Forward	1	0	0	0	1	0	0	1	0	0	1	0	0
	ADPNC Research Corporation													
	RAINBOW SRA #2	1	0	0	0	1	1	0	10	1	0	11	0	0
	ManTech Field Engineering Corporation													
	SUB-TOTAL	9	7	0	0	16	6	1	61	16	1	78	10	1
King Fahd AFB, SA	NA	0	2	0	0	2	1	0	0	0	0	0	2	0
	McDonnell Douglas Helicopter Company													
	McDonnell Douglas Electronic Systems													
Long Beach AFB, SA	NA	0	5	1	0	6	1	0	7	12	0	12	5	1

TABLE D-15

BRAVO PHASE - CONTRACTORS AT FIXED LOCATIONS

FIXED LOCATION	SUB-ORGANIZATIONAL/FIXED LOCATION	CONTRACTORS			FUNCTIONS PERFORMED			PERMANENT PERSONNEL			TEMPORARY PERSONNEL		
		U.S.	P.	FN	MAINT	SUPPLY	TRANS	MAINT	SUPPLY	TRANS	MAINT	SUPPLY	TRANS
Long Beach, California, SA	Almosarah Ltd.												
	Laguna Industries, Incorporated												
	SETV Air Inc.												
	McDonnell Douglas Electronic Systems												
Long Beach, California, SA	McDonnell Douglas Helicopter Company												
	Willbros Butler Engineers, Inc.												
	NA	0	1	0	0	1	0	0	0	0	0	1	0
	Willbros Butler Engineers, Inc.												
Long Beach, California, SA	NA	0	3	0	0	3	1	0	0	0	3	1	0
	McDonnell Douglas Electronic Systems												
	McDonnell Douglas Helicopter Company												
	Willbros Butler Engineers, Inc.												
Long Beach, California, SA	NA	1	3	0	0	4	3	0	2	0	6	1	0
	Montech Field Engineering Corporation												
	McDonnell Douglas Electronic Systems												
	McDonnell Douglas Helicopter Company												
Long Beach, California, SA	Willbros Butler Engineers, Inc.												
	NA	0	2	0	0	2	1	0	0	0	2	1	0
	Laguna Industries, Incorporated												
	Willbros Butler Engineers, Inc.												
Long Beach, California, SA	NA	5	3	0	0	7	1	1	8	0	2	0	1
	Grown International Corporation												
	CCL Inc.												
	Cincinnati Electronics Corporation												
Long Beach, California, SA	Hughes Aircraft Company												
	McDonnell Douglas Helicopter Company												
	Raytheon Corporation Missile Systems (2)												
	Willbros Butler Engineers, Inc.												
Long Beach, California, SA	NA	1	0	0	0	1	1	0	2	1	0	0	0
	Raytheon SPA #3												
	Montech Field Engineering Corporation												
	SUB-TOTAL	6	3	0	0	8	2	1	12	1	2	0	1

TABLE D-15 BRAVO PHASE - CONTRACTORS AT FIXED LOCATIONS																	
FIXED LOCATION	SUB-ORGANIZATIONAL/FIXED LOCATION	CONTRACTORS				FUNCTIONS PERFORMED				PERMANENT PERSONNEL				TEMPORARY PERSONNEL			
		US P	US I	FN P	FN I	MAINT	SUPPLY	TRANS	TOTAL	MAINT	SUPPLY	TRANS	TOTAL	MAINT	SUPPLY	TRANS	TOTAL
Theater	NA	0	3	0	0	3	0	0	3	0	0	0	0	0	0	0	0
	GTE Government Systems Corporation																
	Moist Trucks, Inc.																
	Oshkosh Truck Corporation																
TOTAL	TOTAL	79	32	1	0	110	37	8	155	604	148	15	767	44	6	2	52

TABLE D-16 BRAVO PHASE - CONTRACTORS AT ORGANIZATIONAL LOCATIONS																	
FIXED LOCATION	ORGANIZATIONAL LOCATION	CONTRACTORS				FUNCTIONS PERFORMED				PERMANENT PERSONNEL				TEMPORARY PERSONNEL			
		US P	US T	FN P	FN T	MAINT	SUPPLY	TRANS	TOTAL	MAINT	SUPPLY	TRANS	TOTAL	MAINT	SUPPLY	TRANS	TOTAL
Haffa Air Station SA	1st AG General Dynamics Land Systems General Dynamics Services Company (2) Textron Lycoming	4	0	0	0	4	2	0	6	17	1	0	18	0	0	0	0
	1st CAV Ahmed N. Albinati & Sons Bell Helicopter Textron Inc. FMC Corporation General Dynamics Land Systems General Dynamics Services Company GE ASD GE Defense Systems Division GTE Government Systems Corporation Hughes Aircraft Company Lockheed Support Systems, Inc. McDonnell Douglas Electronic Systems MIL TOPE Corporation Textron Lycoming	7	5	1	0	12	2	1	15	59	1	25	85	6	0	0	6
	1st ID General Dynamics Land Systems General Dynamics Services Company GE ASD GE Defense Systems Division Hughes Aircraft Company Textron Lycoming	3	3	0	0	6	2	0	8	5	1	0	6	4	0	0	4
	11th ADA HDE Raytheon Corporation Missile Systems (3)	3	0	0	0	3	0	0	3	4	0	0	4	0	0	0	0
	12th AVN BDE McDonnell Douglas Electronic Systems	0	1	0	0	1	0	0	1	0	0	0	0	1	0	0	1
	101st AAD ARINC Research Corporation Bell Helicopter Textron Inc. McDonnell Douglas Electronic Systems	0	3	0	0	3	0	0	3	0	0	0	0	3	0	0	3

		BRAVO PHASE - CONTRACTORS AT ORGANIZATIONAL LOCATIONS											
FIXED LOCATION	ORGANIZATIONAL LOCATION	CONTRACTORS				FUNCTIONS PERFORMED				PERMANENT PERSONNEL			
		US		FN		MAINT	SUPPLY	TRANS	TOTAL	MAINT	SUPPLY	TRANS	TOTAL
		P	T	P	T								
	142d FA BDE ARINC Research Corporation	0	1	0	0	1	0	0	1	0	0	0	1
	2nd ACR Bell Helicopter Textron Inc General Dynamics Land Systems General Dynamics Services Company (2) GE Defense Systems Division Hughes Aircraft Company Textron Lycoming	4	3	0	0	7	2	0	9	9	1	0	10
	2nd AD General Dynamics Services Company GTE Government Systems Corporation	2	0	0	0	2	0	0	2	9	0	0	9
	24th ID ARINC Research Corporation Bell Helicopter Textron Inc Electronic & Space Corp General Dynamics Land Systems General Dynamics Services Company (3) GE ASD FMC Corporation McDonnell Douglas Electronic Systems Textron Lycoming	7	4	0	0	11	2	0	13	19	1	0	20
	3rd ACR Automated Research Corporation Bell Helicopter Textron Inc General Dynamics Land Systems General Dynamics Services Company (2) GE ASD GE Defense Systems Division Hughes Aircraft Company Textron Lycoming	4	5	0	0	8	3	0	11	9	1	0	10
	3rd AD General Dynamics Land Systems	5	0	0	0	5	2	0	7	20	1	0	21

TABLE D-16 BRAVO PHASE - CONTRACTORS AT ORGANIZATIONAL LOCATIONS													
FIXED LOCATION	ORGANIZATIONAL LOCATION	CONTRACTORS			FUNCTIONS PERFORMED			PERMANENT PERSONNEL			TEMPORARY PERSONNEL		
		US P	US T	FN T	MAINT	SUPPLY	TRANS	MAINT	SUPPLY	TRANS	MAINT	SUPPLY	TRANS
Plymouth, SA	General Dynamics Services Company (2) GTE Government Systems Corporation Textron Lycoming	1	0	0	1	0	0	5	0	0	0	0	0
	35th Sig BDE GTE Government Systems Corporation	2	2	0	4	1	0	4	1	0	2	0	0
	H2nd ABD ADPNC Research Corporation Bell Helicopter Textron Inc												
	General Dynamics Services Company McDonnell Douglas Electronic Systems												
	IF 8 43/32 ADCOM Raytheon Corporation Missile Systems	1	0	0	1	0	0	2	0	0	0	0	0
	III Corps Elements GTE Government Systems Corporation	1	0	0	1	0	0	3	0	0	0	0	0
	VII Corps ADPNC Research Corporation CCL Inc FMC Corporation	2	1	0	3	0	0	2	0	0	1	0	0
	British General Dynamics Services Company	1	0	0	1	1	0	3	1	0	0	0	0
	Emoryton ADPNC Research Corporation	0	1	0	1	0	0	0	0	0	1	0	0
	OTHER Allison Gas Turbine Division - CMC DynCorp General Electric Aerospace GTE Government Systems Corporation Montech Field Engineering Corporation	1	7	0	8	1	0	1	0	0	10	2	0

		TABLE D-16 BRAVO PHASE - CONTRACTORS AT ORGANIZATIONAL LOCATIONS															
FIXED LOCATION	ORGANIZATIONAL LOCATION	CONTRACTORS				FUNCTIONS PERFORMED				PERMANENT PERSONNEL		TEMPORARY PERSONNEL		TOTAL			
		US		FN		MAINT		SUPPLY		MAINT		SUPPLY					
		P	T	P	T	S	T	S	T	S	T	S	T				
	McDonnell Douglas Electronic Systems (2)																
	McDonnell Douglas Helicopter Company																
	USMC	4	3	0	0	7	2	0	9	9	1	0	3	0	3		
	General Dynamics Land Systems																
	General Dynamics Services Company																
	Ramam Sciences Corporation																
	Lifton Data Systems (3)																
	Textron Lycoming																
TOTAL		52	39	1	0	90	20	1	111	180	10	25	45	4	49		

TABLE D-17 BRAVO PHASE - DACS AT FIXED LOCATIONS														
FIXED LOCATION	SUB-ORGANIZATIONAL/FIXED LOCATION	CONTRACTORS			FUNCTIONS PERFORMED			PERMANENT PERSONNEL			TEMPORARY PERSONNEL			TOTAL
		US	FN	FN	MAINT	SUPPLY	TRANS	MAINT	SUPPLY	TRANS	MAINT	SUPPLY	TRANS	
Abu Dhabi, UAL	TAMP Base				1	1	0	2	6	5	0	0	0	11
Ad Dammam, SA	NA				1	1	0	2	1	0	0	0	0	1
ASG SWA					1	1	0	2	300	200	0	0	0	500
MFT SA					1	1	0	2	90	60	0	0	0	150
SUB TOTAL					3	3	0	6	391	260	0	0	0	651
Al Jubail, SA	NA				1	0	0	1	0	0	0	0	0	0
Amman, SA	AMC SWA				0	1	0	1	0	2	0	0	0	2
TAMP Forward					1	1	0	2	16	16	0	0	0	32
SUB-TOTAL					1	2	0	3	16	18	0	0	0	34
KRMC, SA	NA				1	1	0	2	38	11	0	0	0	39
Long base, SA	NA				1	1	0	2	2	2	0	0	0	4
Long base Bustam, SA	NA				1	1	0	2	2	2	0	0	0	4
Long base Bravo, SA	NA				1	1	0	2	2	2	0	0	0	4
Long base Charlie, SA	NA				1	1	0	2	2	2	0	0	0	4
Long base Delta, SA	NA				1	1	0	2	2	2	0	0	0	4
Long base Echo, SA	NA				1	1	0	2	2	2	0	0	0	4
Theater	NA				4	3	0	7	8	0	0	1	0	8

TABLE D-17 BRAVO PHASE - DAC'S AT FIXED LOCATIONS																	
FIXED LOCATION	SUB-ORGANIZATIONAL/FIXED LOCATION	CONTRACTORS				FUNCTIONS PERFORMED				PERMANENT PERSONNEL			TEMPORARY PERSONNEL				
		US P	US T	FN P	FN T	MAINT	SUPPLY	TRANS	TOTAL	MAINT	SUPPLY	TRANS	TOTAL	MAINT	SUPPLY	TRANS	TOTAL
		0	0	0	0	17	16	0	33	4711	296	0	767	19	1	0	20
TOTAL	TOTAL	0	0	0	0	17	16	0	33	4711	296	0	767	19	1	0	20

TABLE D-18 BRAVO PHASE - DACS AT ORGANIZATIONAL LOCATIONS														
FIXED LOCATION	ORGANIZATIONAL LOCATION	CONTRACTORS			FUNCTIONS PERFORMED			PERMANENT PERSONNEL			TEMPORARY PERSONNEL			TOTAL
		US	FN	FN	MAINT	SUPPLY	TRANS	MAINT	SUPPLY	TRANS	MAINT	SUPPLY	TRANS	
	NA	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE D-19 BRAVO PHASE - CONTRACTORS AT CORPS REAR/THEATER ARMY AREA																	
FIXED LOCATION	ORGANIZATIONAL LOCATION	CONTRACTORS				FUNCTIONS PERFORMED			PERMANENT PERSONNEL			TEMPORARY PERSONNEL					
		US P	US T	FN P	FN T	MAINT	SUPPLY	TRANS	TOTAL	MAINT	SUPPLY	TRANS	TOTAL	MAINT	SUPPLY	TRANS	TOTAL
	NA	0	0	17	0	0	0	17	17	0	0	0	2000	0	0	0	0
	Abdulrah A M Al Khodari Est																
	Adil Al Misnah																
	Ali Salah Alami Est																
	Al Askar Trading Est																
	Al Masjam Contracting																
	Al Shimrany Metal Industries																
	Al Matrood Trading Est																
	Al Zhick Rullo Est																
	American President Lines																
	Bandar International																
	Dallah Transport Co.																
	Farrell Lines																
	Gulf Bridge Est																
	Humoud Ibrahim Al zhab Co LID																
	Ibrahim Al Quatani Est																
	Lykes Lines																
	Sealand																
TOTAL	TOTAL	0	0	17	0	0	0	17	17	0	0	0	2000	0	0	0	0

TABLE D-20
BRAVO PHASE - SUMMARY

TABLE D-20 BRAVO PHASE - SUMMARY																						
LOCATION	CONTRACTORS/DACS	CONTRACTORS					FUNCTIONS PERFORMED				PERMANENT PERSONNEL				TEMPORARY PERSONNEL							
		US P	US T	FN P	FN T	FN I	MAINT	SUPPLY	TRANS	TOTAL	MAINT	SUPPLY	TRANS	TOTAL	MAINT	SUPPLY	TRANS	TOTAL				
FIXED ORGANIZATIONAL	CONTRACTORS	19	32	1	0	0	110	37	8	155	604	148	15	767	44	6	2	52				
	DACS	52	39	1	0	0	90	20	1	111	180	10	25	215	45	4	0	49				
	SUB-TOTAL	131	71	2	0	0	200	57	9	266	784	158	40	982	89	10	2	101				
FIXED ORGANIZATIONAL	CONTRACTORS	0	0	0	0	0	17	16	0	33	471	296	0	767	19	1	0	20				
	DACS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
	SUB-TOTAL	0	0	0	0	0	17	16	0	33	471	296	0	767	19	1	0	20				
COMBAT OR AO/ THEATER ARMY AREA	CONTRACTORS	0	0	17	0	0	0	0	17	17	0	0	2000	2000	0	0	0	0				
	DACS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
	SUB-TOTAL	0	0	17	0	0	0	0	17	17	0	0	2000	2000	0	0	0	0				
TOTAL		131	71	19	0	0	217	73	26	316	1255	454	2940	4649	108	11	2	121				

TABLE D-21 CHARLIE PHASE - CONTRACTORS AT FIXED LOCATIONS																	
FIXED LOCATION	SUB-ORGANIZATIONAL/FIXED LOCATION	CONTRACTORS				FUNCTIONS PERFORMED				PERMANENT PERSONNEL				TEMPORARY PERSONNEL			
		US P	US T	FN P	FN T	MAINT	SUPPLY	TRANS	TOTAL	MAINT	SUPPLY	TRANS	TOTAL	MAINT	SUPPLY	TRANS	TOTAL
Abu Dhabi, UAE	TAMU Bases	8	0	0	0	8	2	0	10	73	8	0	81	0	0	0	0
	CCIBAO Corporation																
	Honeywell Military Avionics Division																
	Johnson Controls World Services, Inc.																
	Martin Marietta Corporation																
	McDonnell Douglas Electronic Systems																
	McDonnell Douglas Helicopter Company																
	Rockwell International Corporation																
	Shorts Brothers																
	NA	4	0	0	0	4	3	3	10	74	21	12	107	0	0	0	0
Ad Dammam, SA	General Dynamics Services Company (2)																
	GTE Government Systems Corporation																
	Tartron Licensing																
	MFT SA	9	0	0	0	8	5	0	13	39	16	0	55	0	0	0	0
	Automated Research Systems																
	FMC Corporation																
	General Dynamics Land Systems																
	GE ASD																
	GE Defense Systems Division																
	Hughes Aircraft Company (2)																
Al Jubail, SA	Pentastar Electronics, Inc.																
	Tartron Licensing																
	TACMIS RSC	1	0	0	0	1	0	0	1	2	0	0	2	0	0	0	0
	CCL Inc.																
	SUB-TOTAL	14	0	0	0	13	8	3	24	115	37	12	164	0	0	0	0
	NA	2	1	0	0	3	1	1	5	2	0	0	2	1	0	1	2
	General Dynamics Land Systems Division																
	Liton Data Systems																
	Wilbros Butler Engineers, Inc.																
	WITROS																
Dhahran, SA	NA	6	0	0	0	6	2	0	8	20	0	0	20	0	0	0	0
	Brown International Corporation																
	Everett Equipment, Inc.																
	General Electric Aerospace																
	GTE Government Systems Corporation																

TABLE D-21 CHARLE PHASE - CONTRACTORS AT FIXED LOCATIONS													
FIXED LOCATION	SUB-ORGANIZATIONAL/FIXED LOCATION	CONTRACTORS				FUNCTIONS PERFORMED				PERMANENT PERSONNEL			
		US	FN	FN	T	MAINT	SUPPLY	TRANS	TOTAL	MAINT	SUPPLY	TRANS	TOTAL
	Raytheon Corporation Missile Systems Rockwell Tactical Systems Division												
	275th Quarter Master Group Willeros Butler Engineers Inc.	1	0	0	0	1	1	1	3	2	3	3	8
	AMC SWA Mack Truck, Inc. Oshkosh Truck Corporation	2	0	0	0	2	2	2	6	2	0	0	2
	CECOM SRA APNIC Research Corporation AVJIN Corporation Circumlight Electronics Corporation Laryna Industries Incorporated Librascope Lotus Mill TOPE Corporation Motorola Incorporated SERV ALP Inc. TILEX Tower Corporation	10	0	0	0	10	1	0	11	23	1	0	24
	Paintow SRA #1 Munttech Field Engineering Corporation	1	0	0	0	1	1	0	2	15	1	0	16
	TAMP Forward Aeromarine Mediterranean Corporation Beach Aerospace Service, Inc. Boeing Helicopters CCBRO Corporation Dyncorp General Electric Company General Instruments Honeywell Howell Hughes ITT McDonnell Douglas Helicopter Company Northrop Petroleum Helicopter Company Sanders	19	0	0	0	19	3	0	22	289	86	0	375

TABLE D-21 CHARLIE PHASE - CONTRACTORS AT FIXED LOCATIONS													
FIXED LOCATION	SUB-ORGANIZATIONAL/FIXED LOCATION	CONTRACTORS				FUNCTIONS PERFORMED				PERMANENT PERSONNEL			
		US	US	FN	FN	MAINT	SUPPLY	TRANS	TOTAL	MAINT	SUPPLY	TRANS	TOTAL
	Scientific Atlantic												
	Sikorsky Aircraft Division												
	Sikorsky International Products, Inc.												
	Task Research												
	SUB-TOTAL	39	0	0	0	39	10	3	52	351	91	3	445
	NA												
	Bell Helicopter Textron Inc.												
	NA												
	Brown International Corporation												
	General Dynamics Services Company												
	GTE Government Systems Corporation												
	Layuna Industries Incorporated												
	Lockheed Support Systems, Inc. (2)												
	McDonnell Douglas Helicopter Company												
	Raytheon Corporation Missile Systems (2)												
	Sikorsky International Products, Inc.												
	Wilbros Butler Engineers, Inc.												
	CECOM Forward												
	ARINC Research Corporation												
	RAINBOW SRA #2												
	Montech Field Engineering Corporation												
	SUB-TOTAL	10	3	0	0	12	4	1	17	57	12	0	69
	NA												
	McDonnell Douglas Helicopter Company												
	SEPV-AIR Inc.												
	NA												
	Wilbros Butler Engineers, Inc.												
	NA												
	Log base Alpha, SA												
	Log base Bastogne, SA												
	NA												
	Wilbros Butler Engineers, Inc.												

TABLE D-21
CHARLIE PHASE - CONTRACTORS AT FIXED LOCATIONS

FIXED LOCATION	SUB-ORGANIZATIONAL/FIXED LOCATION	CONTRACTORS				FUNCTIONS PERFORMED				PERMANENT PERSONNEL				TEMPORARY PERSONNEL			
		US	FN	FN	FN	MAINT	SUPPLY	TRANS	TOTAL	MAINT	SUPPLY	TRANS	TOTAL	MAINT	SUPPLY	TRANS	TOTAL
Long Beach Bravo, SA	NA Wilbros Butler Engineers, Inc.	0	1	0	0	1	1	0	2	0	0	0	0	1	0	0	1
Long Beach Charlie, SA	NA McDonnell Douglas Electronic Systems Mantech Field Engineering Corporation Wilbros Butler Engineers, Inc.	1	2	0	0	3	3	0	6	1	0	0	1	5	0	0	5
Long Beach Echo, SA	NA Wilbros Butler Engineers, Inc.	0	1	0	0	1	1	0	2	0	0	0	0	1	0	0	1
Phoenix, SA	NA Brown International Corporation CCL, Inc. G11 Government Systems Corporation Hughes Aircraft Company Raytheon Corporation Missile Systems (2)	6	0	0	0	6	1	0	7	10	0	0	10	0	0	0	0
Theater	NA Rainbow SIA #3 Mantech Field Engineering Corporation	1	0	0	0	1	1	0	2	4	1	0	5	0	0	0	0
TOTAL	SUB TOTAL	7	0	0	0	7	2	0	9	14	1	0	15	0	0	0	0
TOTAL	NA Muck Trucks, Inc. Orinash Truck Corporation	0	2	0	0	2	0	0	2	0	0	0	0	2	0	0	2
TOTAL	TOTAL	83	13	0	0	94	34	9	137	620	149	15	784	15	0	3	18

TABLE D-22

CHARLIE PHASE - CONTRACTORS AT ORGANIZATIONAL LOCATIONS

FIXED LOCATION	ORGANIZATIONAL LOCATION	CONTRACTOR:				FUNCTIONS PERFORMED				PERMANENT PERSONNEL				TEMPORARY PERSONNEL			
		US				MAINT				SUPPLY				SUPPLY			
		4	1	0	0	5	2	0	7	17	1	0	19	1	0	0	1
KXMC, SA	1st AD General Dynamics Land Systems General Dynamics Services Company (2) McDonnell Douglas Helicopter Company Textron Lycoming	4	1	0	0	5	2	0	7	17	1	0	19	1	0	0	1
	1st CAV Ahmad N. Albinall & Sons FMC Corporation General Dynamics Land Systems General Dynamics Services Company Lockheed Support Systems, Inc. McDonnell Douglas Helicopter Company MILTOPE Corporation	5	1	1	0	7	2	1	10	58	1	25	84	1	0	0	1
	1st IC FMC Corporation General Dynamics Land Systems General Dynamics Services Company	3	0	0	0	3	2	0	5	5	1	0	6	0	0	0	0
	11th ADA BDE Raytheon Corporation Missile Systems (3) McDonnell Douglas Helicopter Company	3	1	0	0	4	0	0	4	4	0	0	4	1	0	0	1
	101st AAD McDonnell Douglas Helicopter Company	0	1	0	0	1	0	0	1	0	0	0	0	1	0	0	1
	2nd ACR FMC Corporation General Dynamics Land Systems General Dynamics Services Company (2)	4	0	0	0	4	2	0	6	9	1	0	10	0	0	0	0
	2nd AD FMC Corporation General Dynamics Services Company GTE Government Systems Corporation	3	0	0	0	3	0	0	3	10	0	0	10	0	0	0	0

CHARLIE PHASE - CONTRACTORS AT ORGANIZATIONAL LOCATIONS																					
FIXED LOCATION	ORGANIZATIONAL LOCATION	CONTRACTORS					FUNCTIONS PERFORMED					PERMANENT PERSONNEL					TEMPORARY PERSONNEL				
		US		FN		T	MAINT	SUPPLY	TRANS	TOTAL	MAINT	SUPPLY	TRANS	TOTAL	MAINT	SUPPLY	TRANS	TOTAL			
		P	T	P	T																
	24th ID Electronic & Service Corp FMC Corporation General Dynamics Land Systems General Dynamics Services Company (3)	6	0	0	0	0	6	2	0	8	18	0	0	0	19	0	0	0	0		
	3rd ACR FMC Corporation General Dynamics Land Systems General Dynamics Services Company (2) Textron Lycoming	5	0	0	0	0	5	2	0	7	10	0	0	0	11	0	0	0	0		
	3rd AD General Dynamics Land Systems General Dynamics Services Company (2) GTE Government Systems Corporation	4	0	0	0	0	4	2	0	6	19	0	0	0	20	0	0	0	0		
	82nd ABD Boi Helicopter Textron Inc General Dynamics Services Company McDonnell Douglas Electronic Systems	3	0	0	0	0	3	1	0	4	5	0	0	0	6	0	0	0	0		
	1st B 43/32 ADCOM Raytheon Corporation Missile Systems	1	0	0	0	0	1	0	0	1	2	0	0	0	2	0	0	0	0		
	III Corps Elements GTE Government Systems Corporation	1	0	0	0	0	1	0	0	1	1	0	0	0	1	0	0	0	0		
	VII Corps CGL Inc McDonnell Douglas Helicopter Company Teledyne Continental Motors	2	1	0	0	0	3	0	0	3	2	0	0	0	2	1	0	0	0		
	XVII ABC McDonnell Douglas Helicopter Company Teledyne Continental Motors	1	1	0	0	0	2	0	0	2	1	0	0	0	1	1	0	0	0		

TABLE D-22																
CHARLIE PHASE - CONTRACTORS AT ORGANIZATIONAL LOCATIONS																
FIXED LOCATION	ORGANIZATIONAL LOCATION	CONTRACTORS			FUNCTIONS PERFORMED			PERMANENT PERSONNEL			TEMPORARY PERSONNEL					
		US P	US T	FN I	MAINT	SUPPLY	TRANS	TOTAL	MAINT	SUPPLY	TRANS	TOTAL	MAINT	SUPPLY	TRANS	TOTAL
	Brn sh General Dynamics Services Company	1	0	0	0	1	0	2	3	1	0	4	0	0	0	0
	OTHER Allison Gas Turbine Division - GMC Bell Helicopter Textron Inc. DynCorp McDonnell Douglas Helicopter Company	2	2	0	0	5	0	5	1	0	0	1	6	0	0	6
	USMC General Dynamics Land Systems General Dynamics Services Company / GTE Government Systems Corporation Kaman Sciences Corporation Lifton Data Systems (3) Textron Lycoming	5	3	0	0	8	2	10	10	1	0	11	3	0	0	3
	TOTAL	53	11	1	0	65	18	85	175	10	25	210	15	0	0	15

TABLE D-23 CHARLIE PHASE - DACS AT FIXED LOCATIONS																	
FIXED LOCATION	SUB-ORGANIZATIONAL/FIXED LOCATION	CONTRACTORS				FUNCTIONS PERFORMED				PERMANENT PERSONNEL				TEMPORARY PERSONNEL			
		US	FN	FN	FN	MAINT	SUPPLY	TRANS	TOTAL	MAINT	SUPPLY	TRANS	TOTAL	MAINT	SUPPLY	TRANS	TOTAL
Alor Dharma, UAE	TAMU Base					1	1	0	2	6	5	0	11	0	0	0	0
Alor Dharma, SA	ASG SWA					1	1	0	2	300	200	0	500	0	0	0	0
	MFT SA					1	1	0	2	90	60	0	150	0	0	0	0
	SUB-TOTAL					2	2	0	4	390	260	0	650	0	0	0	0
Dhahran, SA	AMC SWA					0	1	0	1	0	2	0	2	0	0	0	0
	TAMU Forward					1	1	0	2	19	18	0	37	0	0	0	0
	SUB-TOTAL					1	2	0	3	19	20	0	39	0	0	0	0
KKMC, SA	NA					1	1	0	2	38	1	0	39	0	0	0	0
Long Esso Alpha, SA	NA					1	1	0	2	2	2	0	4	0	0	0	0
Long Esso Bastogne, SA	NA					1	1	0	2	2	2	0	4	0	0	0	0
Long Esso Bravo, SA	NA					1	1	0	2	2	2	0	4	0	0	0	0
Long Esso Charlie, SA	NA					1	1	0	2	2	2	0	4	0	0	0	0
Long Esso Delta, SA	NA					1	1	0	2	2	2	0	4	0	0	0	0
Long Esso Echo, SA	NA					1	1	0	2	2	2	0	4	0	0	0	0
Thudner	NA					3	3	0	6	7	0	0	7	0	1	0	1
TOTAL	TOTAL	0	0	0	0	14	15	0	29	472	298	0	770	0	1	0	1

TABLE D-24 CHARLIE PHASE - DACS AT ORGANIZATIONAL LOCATIONS														
FIXED LOCATION	ORGANIZATIONAL LOCATION	CONTRACTORS			FUNCTIONS PERFORMED			PERMANENT PERSONNEL			TEMPORARY PERSONNEL			TOTAL
		US	FN	FN	MAINT	SUPPLY	TRANS	MAINT	SUPPLY	TRANS	MAINT	SUPPLY	TRANS	
	NA				0	0	0	0	0	0	0	0	0	0
TOTAL	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE D-25 CHARLIE PHASE - CONTRACTORS AT CORPS REAR/THEATER ARMY AREA													
FIXED LOCATION	ORGANIZATIONAL LOCATION	CONTRACTORS				FUNCTIONS PERFORMED				PERMANENT PERSONNEL			
		US P	US T	FN P	FN T	MAINT	SUPPLY	TRANS	TOTAL	MAINT	SUPPLY	TRANS	TOTAL
	NA	0	0	17	0	0	0	17	17	0	0	0	0
	Aboulah A M Al Khodari Est												
	Adil Al Misahid												
	Al Saleh Aluniri Est												
	Al Askar Trading Est												
	Al Maqum Contracting												
	Al Shumayy Metal Industries												
	Al Matlood Trading Est												
	Al Thikr Rullo Est												
	American President Lines												
	Banidar International												
	Dalish Transport Co												
	Farrell Lines												
	Gulf Bridge Est												
	Hunaid Ibrahim Al zlab Co LTD												
	Ibrahim Al Qutarni Est												
	Lukus Lines												
	Sealand												
TOTAL	TOTAL	0	0	17	0	0	0	17	17	0	0	0	0

TABLE D-26 CHARLIE PHASE - SUMMARY														
LOCATION	CONTRACTORS/DACS	CONTRACTORS			FUNCTIONS PERFORMED			PERMANENT PERSONNEL			TEMPORARY PERSONNEL			TOTAL
		US	FN	FN	MAINT	SUPPLY	TRANS	MAINT	SUPPLY	TRANS	MAINT	SUPPLY	TRANS	
FIXED ORGANIZATIONAL	CONTRACTORS	83	13	0	94	34	91	149	620	15	784	15	3	18
	CONTRACTORS	53	11	1	66	18	1	10	175	25	210	15	0	15
	SUB-TOTAL	136	24	1	160	52	10	159	795	40	994	30	3	33
FIXED ORGANIZATIONAL	DACS	0	0	0	14	15	0	298	472	0	770	0	1	1
	DACS	0	0	0	0	0	0	0	0	0	0	0	0	0
	SUB-TOTAL	0	0	0	14	15	0	298	472	0	770	0	1	1
CORP REAR/ THEATER ARMY AREA	CONTRACTORS	0	0	17	0	0	17	0	0	2900	2900	0	0	0
TOTAL	TOTAL	136	24	18	174	67	27	457	1267	2940	4664	30	3	34

APPENDIX E

PERSONNEL BY LOCATION

PERSONNEL BY LOCATION

In this appendix, Table E-1 shows the numbers of permanent and temporary personnel located at each fixed location, organizational location, and Corps Rear/Theater Army area identified in the study. The number of U.S. contractor, foreign contractor, and Department of Army Civilian (DAC) personnel is broken down by functional area for each phase. The table is ordered by fixed locations, organizational locations, and then Corps Rear/Theater Army area. Also, at the end of the table, all personnel totals are summed together in a field entitled: "Total."

In the table header, the following abbreviations are used: "Maint" for maintenance and "Trans" for transportation.

TABLE E-1

TABLE E-1																	
PERSONNEL BY LOCATION																	
LOCATION	INITIAL				ALPHA				BRAVO				CHARLIE				
	MAINT	SUPPLY	TRANS	TOTAL	MAINT	SUPPLY	TRANS	TOTAL	MAINT	SUPPLY	TRANS	TOTAL	MAINT	SUPPLY	TRANS	TOTAL	
Abu Dhabi, UAE	Permanent																
	US	22	4	0	36	50	5	0	55	72	8	0	80	73	8	0	81
	Foreign	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DACs	2	2	0	4	6	5	0	11	6	5	0	11	6	5	0	11
	Total	24	6	0	40	56	10	0	66	78	13	0	91	79	13	0	92
Temporary	US	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Foreign	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DACs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ad Dammam, SA	Permanent																
	US	95	7	9	111	81	27	11	119	96	33	11	140	115	37	12	164
	Foreign	1	0	0	1	8	0	0	8	0	0	0	0	0	0	0	0
	DACs	1	8	0	9	220	160	0	380	391	260	0	651	390	260	0	650
	Total	97	15	9	121	309	187	11	507	487	293	11	791	505	297	12	814
Temporary	US	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Foreign	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DACs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Al Jubail, SA	Permanent																
	US	0	0	0	0	4	0	0	4	2	0	0	2	2	0	0	2
	Foreign	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DACs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total	0	0	0	0	4	0	0	4	2	0	0	2	2	0	0	2
Temporary	US	1	0	1	2	1	2	0	3	1	1	0	2	1	0	1	2
	Foreign	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DACs	0	0	0	0	19	0	0	19	19	0	0	19	0	0	0	0
	Total	1	0	1	2	20	2	0	22	20	1	0	21	1	0	1	2

TABLE E-1

TABLE E-1													
PERSONNEL BY LOCATION													
LOCATION	INITIAL			ALPHA			BRAVO			CHARLIE			
	MAINT	SUPPLY	TRANS TOTAL	MAINT	SUPPLY	TRANS TOTAL	MAINT	SUPPLY	TRANS TOTAL	MAINT	SUPPLY	TRANS TOTAL	
Dhahran, SA	Permanent/												
	US	191	49	2	242	306	71	3	380	345	90	3	438
	Foreign	0	0	0	0	0	0	0	0	0	0	0	0
	DACs	9	8	0	17	21	14	0	35	16	18	0	34
	Total	200	57	2	259	327	85	3	415	361	108	3	472
Hafir Al Batin, SA	Permanent/												
	US	1	0	0	1	5	0	0	5	4	0	0	4
	Foreign	0	0	0	0	0	0	0	0	0	0	0	0
	DACs	0	0	0	0	0	0	0	0	0	0	0	0
	Total	1	0	0	1	5	0	0	5	4	0	0	4
Khamis, SA	Permanent/												
	US	0	0	0	0	1	0	0	1	2	0	0	2
	Foreign	0	0	0	0	0	0	0	0	0	0	0	0
	DACs	0	0	0	0	0	0	0	0	0	0	0	0
	Total	0	0	0	0	1	0	0	1	2	0	0	2
Khamis, SA	Permanent/												
	US	0	0	0	0	0	0	0	0	0	0	0	0
	Foreign	0	0	0	0	0	0	0	0	0	0	0	0
	DACs	0	0	0	0	0	0	0	0	0	0	0	0
	Total	0	0	0	0	0	0	0	0	0	0	0	0
Khamis, SA	Permanent/												
	US	23	10	0	33	23	15	1	39	61	16	1	78
	Foreign	0	0	0	0	0	0	0	0	0	0	0	0
	DACs	0	0	0	0	0	0	0	0	38	1	0	39
	Total	23	10	0	33	23	15	1	39	99	17	1	117
Khamis, SA	Permanent/												
	US	2	0	1	3	6	0	2	8	10	1	0	11
	Foreign	0	0	0	0	0	0	0	0	0	0	0	0
	DACs	0	0	0	0	0	0	0	0	0	0	0	0
	Total	2	0	1	3	6	0	2	8	10	1	0	11

TABLE E-1

PERSONNEL BY LOCATION												
LOCATION	INITIAL			ALPHA			BRAVO			CHARLIE		
	MAINT	SUPPLY	TRANS TOTAL	MAINT	SUPPLY	TRANS TOTAL	MAINT	SUPPLY	TRANS TOTAL	MAINT	SUPPLY	TRANS TOTAL
King Fahd AFB, SA	Permanent											
	US	0	0	0	0	0	0	0	0	5	0	5
	Foreign	0	0	0	0	0	0	0	0	0	0	0
	DACs	0	0	0	0	0	0	0	0	0	0	0
	Total	0	0	0	0	0	0	0	0	5	0	5
Log base Alpha	Temporary											
	US	1	0	0	1	0	2	0	0	1	0	1
	Foreign	0	0	0	0	0	0	0	0	0	0	0
	DACs	0	0	0	0	0	0	0	0	0	0	0
	Total	1	0	0	1	0	2	0	0	1	0	1
Log base Bastogne	Permanent											
	US	0	0	0	0	0	0	0	0	0	0	0
	Foreign	0	0	0	0	0	0	0	0	0	0	0
	DACs	0	0	0	0	0	0	0	0	0	0	0
	Total	0	0	0	0	0	0	0	0	0	0	0
Log base Bastogne	Temporary											
	US	0	0	0	3	1	5	1	0	1	0	1
	Foreign	0	0	0	0	0	0	0	0	0	0	0
	DACs	0	0	0	0	0	0	0	0	0	0	0
	Total	0	0	0	3	1	5	1	0	1	0	1
Log base Bastogne	Permanent											
	US	0	0	0	0	0	0	0	0	0	0	0
	Foreign	0	0	0	0	0	0	0	0	0	0	0
	DACs	0	0	0	2	2	2	2	0	2	2	4
	Total	0	0	0	2	2	2	2	0	2	2	4
Log base Bastogne	Temporary											
	US	0	0	1	1	0	1	0	1	0	0	1
	Foreign	0	0	0	0	0	0	0	0	0	0	0
	DACs	0	0	0	0	0	0	0	0	0	0	0
	Total	0	0	1	1	0	1	0	1	0	0	1

TABLE E-1

PERSONNEL BY LOCATION												
LOCATION	INITIAL			ALPHA			BRAVO			CHARLIE		
	MAINT	SUPPLY	TRANS TOTAL	MAINT	SUPPLY	TRANS TOTAL	MAINT	SUPPLY	TRANS TOTAL	MAINT	SUPPLY	TRANS TOTAL
Log base Bravo	Permanent/											
	US	0	0	0	0	0	0	0	0	0	0	0
	Foreign	0	0	0	0	0	0	0	0	0	0	0
	DACs	0	0	0	2	2	2	2	0	2	2	0
	Total	0	0	0	2	2	2	2	0	2	2	0
Log base Charlie	Permanent/											
	US	0	0	0	1	1	0	0	0	1	0	0
	Foreign	0	0	0	0	0	0	0	0	0	0	0
	DACs	0	0	0	0	0	0	0	0	0	0	0
	Total	0	0	0	1	1	0	0	0	1	0	0
Log base Delta	Permanent/											
	US	0	0	0	0	0	0	0	0	0	0	0
	Foreign	0	0	0	0	0	0	0	0	0	0	0
	DACs	0	0	0	0	0	0	0	0	0	0	0
	Total	0	0	0	0	0	0	0	0	0	0	0
Log base Echo	Permanent/											
	US	0	0	0	0	0	0	0	0	0	0	0
	Foreign	0	0	0	0	0	0	0	0	0	0	0
	DACs	0	0	0	0	0	0	0	0	0	0	0
	Total	0	0	0	0	0	0	0	0	0	0	0

TABLE E-1												
PERSONNEL BY LOCATION												
LOCATION	INITIAL			ALPHA			BRAVO			CHARLIE		
	MAINT	SUPPLY	TRANS TOTAL	MAINT	SUPPLY	TRANS TOTAL	MAINT	SUPPLY	TRANS TOTAL	MAINT	SUPPLY	TRANS TOTAL
Log base Echo	Permanent											
	US	0	0	0	0	0	0	0	0	0	0	0
	Foreign	0	0	0	0	0	0	0	0	0	0	0
	DACs	0	0	0	0	0	2	2	0	4	2	2
	Total	0	0	0	0	0	2	2	0	4	2	2
Temporary	US	0	0	0	0	0	2	1	0	3	1	0
	Foreign	0	0	0	0	0	0	0	0	0	0	0
	DACs	0	0	0	0	0	0	0	0	0	0	0
	Total	0	0	0	0	0	2	1	0	3	1	0
	1											
Riyadh, SA	Permanent											
	US	2	0	0	7	0	12	1	0	13	14	1
	Foreign	0	0	0	0	0	0	0	0	0	0	0
	DACs	0	0	0	0	0	0	0	0	0	0	0
	Total	2	0	0	7	0	12	1	0	13	14	1
Temporary	US	1	0	1	1	0	2	0	1	3	0	0
	Foreign	0	0	0	0	0	0	0	0	0	0	0
	DACs	0	0	0	0	0	0	0	0	0	0	0
	Total	1	0	1	1	0	2	0	1	3	0	0
	1											
Theater	Permanent											
	US	0	0	0	0	0	0	0	0	0	0	0
	Foreign	0	0	0	0	0	0	0	0	0	0	0
	DACs	0	0	0	9	0	8	0	0	8	7	0
	Total	0	0	0	9	0	8	0	0	8	7	0
Temporary	US	1	0	0	12	2	8	0	0	6	2	0
	Foreign	0	0	0	0	0	0	0	0	0	0	0
	DACs	0	0	0	0	1	0	1	0	1	0	0
	Total	1	0	0	12	3	8	1	0	6	2	0
	1											

TABLE E-1

PERSONNEL BY LOCATION												
LOCATION	INITIAL			ALPHA			BRAVO			CHARLIE		
	MAINT	SUPPLY	TRANS TOTAL	MAINT	SUPPLY	TRANS TOTAL	MAINT	SUPPLY	TRANS TOTAL	MAINT	SUPPLY	TRANS TOTAL
1st AD	Permanent											
	US	0	0	0	16	1	0	17	17	1	0	18
	Foreign	0	0	0	0	0	0	0	0	0	0	0
	DACs	0	0	0	0	0	0	0	0	0	0	0
	Total	0	0	0	16	1	0	17	17	1	0	18
	Temporary											
	US	0	0	0	0	0	0	0	0	1	0	1
	Foreign	0	0	0	0	0	0	0	0	0	0	0
	DACs	0	0	0	0	0	0	0	0	0	0	0
	Total	0	0	0	0	0	0	0	0	1	0	1
1st CAV	Permanent											
	US	59	5	1	63	2	0	65	59	1	0	59
	Foreign	0	0	0	0	0	25	25	0	0	25	25
	DACs	0	0	0	0	0	0	0	0	0	0	0
	Total	59	5	1	63	2	25	90	59	1	25	84
	Temporary											
	US	4	0	0	6	0	0	6	6	0	0	1
	Foreign	0	0	0	0	0	0	0	0	0	0	0
	DACs	0	0	0	0	0	0	0	0	0	0	0
	Total	4	0	0	6	0	0	6	6	0	0	1
1st ID	Permanent											
	US	0	0	0	5	1	0	6	5	1	0	6
	Foreign	0	0	0	0	0	0	0	0	0	0	0
	DACs	0	0	0	0	0	0	0	0	0	0	0
	Total	0	0	0	5	1	0	6	5	1	0	6
	Temporary											
	US	0	0	0	5	1	0	6	4	0	0	0
	Foreign	0	0	0	0	0	0	0	0	0	0	0
	DACs	0	0	0	0	0	0	0	0	0	0	0
	Total	0	0	0	5	1	0	6	4	0	0	0

TABLE E-1

TABLE E-1												
PERSONNEL BY LOCATION												
LOCATION	INITIAL			ALPHA			BRAVO			CHARLIE		
	MAINT	SUPPLY	TRANS TOTAL	MAINT	SUPPLY	TRANS TOTAL	MAINT	SUPPLY	TRANS TOTAL	MAINT	SUPPLY	TRANS TOTAL
11th ADA BDE	Permanent											
	US	2	0	0	2	4	0	0	0	4	0	0
	Foreign	0	0	0	0	0	0	0	0	0	0	0
	DACs	0	0	0	0	0	0	0	0	0	0	0
	Total	2	0	0	2	4	0	0	0	4	0	0
	Temporary											
	US	0	0	0	0	0	0	0	0	0	0	1
	Foreign	0	0	0	0	0	0	0	0	0	0	0
	DACs	0	0	0	0	0	0	0	0	0	0	0
	Total	0	0	0	0	0	0	0	0	0	0	1
12th AVN BDE	Permanent											
	US	0	0	0	0	0	0	0	0	0	0	0
	Foreign	0	0	0	0	0	0	0	0	0	0	0
	DACs	0	0	0	0	0	0	0	0	0	0	0
	Total	0	0	0	0	0	0	0	0	0	0	0
	Temporary											
	US	1	0	0	1	1	0	0	1	1	0	0
	Foreign	0	0	0	0	0	0	0	0	0	0	0
	DACs	0	0	0	0	0	0	0	0	0	0	0
	Total	1	0	0	1	1	0	0	1	1	0	0
101st AAD	Permanent											
	US	2	1	0	3	2	1	0	3	0	0	0
	Foreign	0	0	0	0	0	0	0	0	0	0	0
	DACs	0	0	0	0	0	0	0	0	0	0	0
	Total	2	1	0	3	2	1	0	3	0	0	0
	Temporary											
	US	1	0	0	1	2	0	0	2	3	0	0
	Foreign	0	0	0	0	0	0	0	0	0	0	0
	DACs	0	0	0	0	0	0	0	0	0	0	0
	Total	1	0	0	1	2	0	0	2	3	0	0

TABLE E-1

PERSONNEL BY LOCATION

LOCATION	INITIAL			ALPHA			BRAVO			CHARLIE		
	MAINT	SUPPLY	TRANS TOTAL	MAINT	SUPPLY	TRANS TOTAL	MAINT	SUPPLY	TRANS TOTAL	MAINT	SUPPLY	TRANS TOTAL
124th MI BN	Permanent											
	US	5	0	0	5	0	0	0	5	0	0	0
	Foreign	0	0	0	0	0	0	0	0	0	0	0
	DACs	0	0	0	0	0	0	0	0	0	0	0
	Total	5	0	0	5	0	0	0	5	0	0	0
	Temporary											
	US	0	0	0	0	0	0	0	0	0	0	0
	Foreign	0	0	0	0	0	0	0	0	0	0	0
	DACs	0	0	0	0	0	0	0	0	0	0	0
	Total	0	0	0	0	0	0	0	0	0	0	0
142d FA BDE	Permanent											
	US	0	0	0	0	0	0	0	0	0	0	0
	Foreign	0	0	0	0	0	0	0	0	0	0	0
	DACs	0	0	0	0	0	0	0	0	0	0	0
	Total	0	0	0	0	0	0	0	0	0	0	0
	Temporary											
	US	0	0	0	1	0	0	1	0	0	0	0
	Foreign	0	0	0	0	0	0	0	0	0	0	0
	DACs	0	0	0	0	0	0	0	0	0	0	0
	Total	0	0	0	1	0	0	1	0	0	0	0
2nd ACR	Permanent											
	US	0	0	0	9	1	0	9	1	9	1	10
	Foreign	0	0	0	0	0	0	0	0	0	0	0
	DACs	0	0	0	0	0	0	0	0	0	0	0
	Total	0	0	0	9	1	0	9	1	9	1	10
	Temporary											
	US	0	0	0	4	2	0	4	0	0	0	0
	Foreign	0	0	0	0	0	0	0	0	0	0	0
	DACs	0	0	0	0	0	0	0	0	0	0	0
	Total	0	0	0	4	2	0	4	0	0	0	0

TABLE E-1

LOCATION	PERSONNEL BY LOCATION											
	INITIAL			ALPHA			BRAVO			CHARLIE		
	MAINT	SUPPLY	TRANS	TOTAL	MAINT	SUPPLY	TRANS	TOTAL	MAINT	SUPPLY	TRANS	TOTAL
2nd AD	Permanent											
	US	0	0	0	0	9	0	0	9	0	0	10
	Foreign	0	0	0	0	0	0	0	0	0	0	0
	DACs	0	0	0	0	0	0	0	0	0	0	0
	Total	0	0	0	0	9	0	0	9	0	0	10
	Temporary											
	US	0	0	0	0	0	0	0	0	0	0	0
	Foreign	0	0	0	0	0	0	0	0	0	0	0
	DACs	0	0	0	0	0	0	0	0	0	0	0
	Total	0	0	0	0	0	0	0	0	0	0	0
2 6th ID	Permanent											
	US	9	0	0	9	21	1	0	22	19	1	19
	Foreign	0	0	0	0	0	0	0	0	0	0	0
	DACs	0	0	0	0	6	0	0	6	0	0	0
	Total	9	0	0	9	27	1	0	28	19	1	19
	Temporary											
	US	5	0	0	5	5	0	0	5	4	0	9
	Foreign	0	0	0	0	0	0	0	0	0	0	0
	DACs	0	0	0	0	0	0	0	0	0	0	0
	Total	5	0	0	5	5	0	0	5	4	0	9
212th FA BDE	Permanent											
	US	0	0	0	0	0	0	0	0	0	0	0
	Foreign	0	0	0	0	0	0	0	0	0	0	0
	DACs	0	0	0	0	0	0	0	0	0	0	0
	Total	0	0	0	0	0	0	0	0	0	0	0
	Temporary											
	US	0	0	0	0	14	0	0	14	0	0	0
	Foreign	0	0	0	0	0	0	0	0	0	0	0
	DACs	0	0	0	0	0	0	0	0	0	0	0
	Total	0	0	0	0	14	0	0	14	0	0	0

TABLE-1

PERSONNEL BY LOCATION																	
LOCATION	INITIAL				ALPHA				BRAVO				CHARLIE				
	MAINT	SUPPLY	TRANS	TOTAL	MAINT	SUPPLY	TRANS	TOTAL	MAINT	SUPPLY	TRANS	TOTAL	MAINT	SUPPLY	TRANS	TOTAL	
3rd ACR	Permanent																
	US	6	1	0	7	11	1	0	12	9	1	0	10	10	1	0	11
	Foreign	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DACs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total	6	1	0	7	11	1	0	12	9	1	0	10	10	1	0	11
3rd AD	Permanent																
	US	4	0	0	4	4	0	0	4	5	2	0	7	0	0	0	0
	Foreign	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DACs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total	4	0	0	4	4	0	0	4	5	2	0	7	0	0	0	0
35th Sig BDE	Permanent																
	US	0	0	0	0	18	1	0	19	20	1	0	21	19	1	0	20
	Foreign	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DACs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total	0	0	0	0	18	1	0	19	20	1	0	21	19	1	0	20
35th Sig BDE	Permanent																
	US	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Foreign	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DACs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
35th Sig BDE	Permanent																
	US	0	0	0	0	3	0	0	3	5	0	0	5	0	0	0	0
	Foreign	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DACs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total	0	0	0	0	3	0	0	3	5	0	0	5	0	0	0	0
35th Sig BDE	Permanent																
	US	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Foreign	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DACs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE E-1

LOCATION	PERSONNEL BY LOCATION											
	INITIAL			ALPHA			BRAVO			CHARLIE		
	MAINT	SUPPLY	TRANS TOTAL	MAINT	SUPPLY	TRANS TOTAL	MAINT	SUPPLY	TRANS TOTAL	MAINT	SUPPLY	TRANS TOTAL
82nd A&D	Permanent/											
	US	0	0	0	3	1	0	0	4	4	1	0
	Foreign	0	0	0	0	0	0	0	0	0	0	0
	DACs	0	0	0	0	0	0	0	0	0	0	0
	Total	0	0	0	3	1	0	0	4	4	1	0
	Temporary											
	US	0	0	0	1	0	0	0	1	2	0	0
	Foreign	0	0	0	0	0	0	0	0	0	0	0
	DACs	0	0	0	0	0	0	0	0	0	0	0
	Total	0	0	0	1	0	0	0	1	2	0	0
TF 8-43/32 ADCOM	Permanent/											
	US	0	0	0	2	0	0	0	2	2	0	0
	Foreign	0	0	0	0	0	0	0	0	0	0	0
	DACs	0	0	0	0	0	0	0	0	0	0	0
	Total	0	0	0	2	0	0	0	2	2	0	0
	Temporary											
	US	0	0	0	0	0	0	0	0	0	0	0
	Foreign	0	0	0	0	0	0	0	0	0	0	0
	DACs	0	0	0	0	0	0	0	0	0	0	0
	Total	0	0	0	0	0	0	0	0	0	0	0
III Corps Element	Permanent/											
	US	0	0	0	3	0	0	0	3	3	0	0
	Foreign	0	0	0	0	0	0	0	0	0	0	0
	DACs	0	0	0	0	0	0	0	0	0	0	0
	Total	0	0	0	3	0	0	0	3	3	0	0
	Temporary											
	US	0	0	0	0	0	0	0	0	0	0	0
	Foreign	0	0	0	0	0	0	0	0	0	0	0
	DACs	0	0	0	0	0	0	0	0	0	0	0
	Total	0	0	0	0	0	0	0	0	0	0	0

TABLE E-1

PERSONNEL BY LOCATION

LOCATION	INITIAL			ALPHA			BRAVO			CHARLIE		
	MAINT	SUPPLY	TRANS	TOTAL	MAINT	SUPPLY	TRANS	TOTAL	MAINT	SUPPLY	TRANS	TOTAL
VII Corps	Permanent											
	US	0	0	0	0	1	0	0	1	2	0	2
	Foreign	0	0	0	0	0	0	0	0	0	0	0
	DACs	0	0	0	0	0	0	0	0	0	0	0
	Total	0	0	0	0	1	0	0	1	2	0	2
	Temporary											
	US	0	0	0	0	1	0	0	1	1	0	1
	Foreign	0	0	0	0	0	0	0	0	0	0	0
	DACs	0	0	0	0	0	0	0	0	0	0	0
	Total	0	0	0	0	1	0	0	1	1	0	1
XVIII Corps	Permanent											
	US	0	0	0	0	0	0	0	0	0	0	0
	Foreign	0	0	0	0	0	0	0	0	0	0	0
	DACs	0	0	0	0	0	0	0	0	0	0	0
	Total	0	0	0	0	0	0	0	0	0	0	0
	Temporary											
	US	0	0	0	0	0	0	0	0	1	0	1
	Foreign	0	0	0	0	0	0	0	0	0	0	0
	DACs	0	0	0	0	0	0	0	0	0	0	0
	Total	0	0	0	0	0	0	0	0	1	0	1
British	Permanent											
	US	0	0	0	0	2	1	0	3	3	1	4
	Foreign	0	0	0	0	0	0	0	0	0	0	0
	DACs	0	0	0	0	0	0	0	0	0	0	0
	Total	0	0	0	0	2	1	0	3	3	1	4
	Temporary											
	US	0	0	0	0	0	0	0	0	0	0	0
	Foreign	0	0	0	0	0	0	0	0	0	0	0
	DACs	0	0	0	0	0	0	0	0	0	0	0
	Total	0	0	0	0	0	0	0	0	0	0	0

TABLE E-1

PERSONNEL BY LOCATION												
LOCATION	INITIAL			ALPHA			BRAVO			CHARLIE		
	MAINT	SUPPLY	TRANS TOTAL	MAINT	SUPPLY	TRANS TOTAL	MAINT	SUPPLY	TRANS TOTAL	MAINT	SUPPLY	TRANS TOTAL
Egyptian	Permanent											
	US	0	0	0	0	0	0	0	0	0	0	0
	Foreign	0	0	0	0	0	0	0	0	0	0	0
	DACs	0	0	0	0	0	0	0	0	0	0	0
	Total	0	0	0	0	0	0	0	0	0	0	0
Other	Permanent											
	US	0	0	0	1	0	0	1	0	0	0	0
	Foreign	0	0	0	0	0	0	0	0	0	0	0
	DACs	0	0	0	0	0	0	0	0	0	0	0
	Total	0	0	0	1	0	0	1	0	0	0	0
USMC	Permanent											
	US	6	0	0	13	0	0	10	2	0	6	0
	Foreign	0	0	0	0	0	0	0	0	0	0	0
	DACs	0	0	0	0	0	0	0	0	0	0	0
	Total	6	0	0	13	0	0	10	2	0	6	0
USMC	Permanent											
	US	0	0	0	5	1	0	9	1	0	10	1
	Foreign	0	0	0	0	0	0	0	0	0	0	0
	DACs	0	0	0	0	0	0	0	0	0	0	0
	Total	0	0	0	5	1	0	9	1	0	10	1
USMC	Permanent											
	US	0	0	0	3	0	0	3	0	0	3	0
	Foreign	0	0	0	0	0	0	0	0	0	0	0
	DACs	0	0	0	0	0	0	0	0	0	0	0
	Total	0	0	0	3	0	0	3	0	0	3	0

TABLE E-1

PERSONNEL BY LOCATION

LOCATION	INITIAL			ALPHA			BRAVO			CHARLIE		
	MAINT	SUPPLY	TRANS TOTAL	MAINT	SUPPLY	TRANS TOTAL	MAINT	SUPPLY	TRANS TOTAL	MAINT	SUPPLY	TRANS TOTAL
Corps Rear/ Theater Army Areas	Permanent											
	US			0			0			0		
	Foreign			0			0			0		
	DACs			0			0			0		
Total	0	0	882	0	0	2420	0	0	2900	0	0	2900
Temporary	US			0			0			0		
	Foreign			0			0			0		
	DACs			0			0			0		
	Total			0			0			0		
TOTAL	Permanent											
	US			426			77			159		
	Foreign			1			0			0		
	DACs			12			18			298		
Total	439	95	894	948	317	2460	1255	454	2940	1267	457	2940
Temporary	US			28			0			30		
	Foreign			0			0			0		
	DACs			0			0			0		
	Total			28			0			30		
Total	467	95	989	1046	327	2700	1283	454	2940	1297	457	2940

APPENDIX F

WEAPON SYSTEMS AND END ITEMS SUPPORTED

WEAPON SYSTEMS AND END ITEMS SUPPORTED

In this appendix, Table F-1 shows the weapon systems and end items that contractors and DACs supported during Operations Desert Shield and Storm. Also, two table entries reflect the bus and truck drivers provided by foreign contractors. For each weapon system or end-item entry, the table shows the war phases in which that system or end item was supported and who provided the support. In the table, the following three abbreviations are used: C for Department of the Army Civilians, F for foreign contractors, and U for U.S. contractors.

TABLE F-1

WEAPON SYSTEMS AND END ITEMS SUPPORTED BY PHASE

Weapon system/end item	Phase			
	Initial	Alpha	Bravo	Charlie
AB-1309 (V)4/TRC Quick Erect Antenna Mast		U	U	U
ADP equipment	U	U	U	U
AGT 1500 gas turbine engine	U	U	U	U
AH-1	U	U	U	U
AH-1F/E	C	C	C	C
AH-64	U, C	U, C	C	U, C
AH-64A	U	U	U	U
Aircraft engines	U	U	U	U
ALDS 1790 diesel engine		U	U	U
AM-6000 (radio)			U	U
AN/ASC-15B C(3)		U	U	U
AN/GRC-222 (radio)		U	U	U
AN/PSC-3 (radio)			U	U
AN/TSQ-138 Trailblazer	U	U		
AN/TTC-39A	U	U	U	U
AN/TYC-39	U	U	U	U
AN/TYQ-30		U	U	
C-23A	U	U	U	U
CH-47	U, C	U, C	U, C	U, C
CH-47D	U	U	U	U
Chemical protection equipment	C	C	C	C
Common hardware/software		U	U	U
CTASC-I	U	U	U	U
D7 bulldozers		F	F	
Drivers - bus	F	F	F	F
Drivers - truck	F	F	F	F
DSESTS	U	U	U	U
EETFS (OQ-290)	U	U	U	U
EH-60	C	C	C	C
FIRREFLEX		U	U	U

Notes: C = Department of the Army Civilians, F = foreign contractors, and U = U.S. contractors

TABLE F-1

WEAPON SYSTEMS AND END ITEMS SUPPORTED BY PHASE (Continued)

Weapon system/end item	Phase			
	Initial	Alpha	Bravo	Charlie
Fixed-wing aircraft	U	U	U	U
FOX nuclear-biological-chemical reconnaissance system	U, F	U, F	U	U
G/VLLD system laser designator rangefinder		C	C	
GPS receivers		U	U	U
HAWK missile	U	U	U	U
HELLFIRE		U	U	U
HETs commercial		U	U	U
HST-4 (radio)		U	U	U
IEW equipment (various)	U	U	U	U
IGT-40B engine			U	U
IHADSS	U	U	U	U
Inland petroleum distribution system	U	U	U	U
Joint TADIL-A distribution systems (JTADS) - Patriot			U	U
Light TACFIRE		U	U	U
LST-5		U	U	U
M1	U, C	U, C	U, C	U, C
M1AI	U, C	U, C	U, C	U, C
M1-IPM	U, C	U, C	U, C	U, C
M2 (Bradley Fighting Vehicle System)	U, C	U, C	U, C	U, C
M3		C	C	C
M9 ACE		U, C	U, C	U, C
M60			U	U
M88	U	U	U	U
M88A1				U
M109	U	U	U	U
M577	U	U	U	U

Notes: C = Department of the Army Civilians, F = foreign contractors, and U = U.S. contractors

TABLE F-1

WEAPON SYSTEMS AND END ITEMS SUPPORTED BY PHASE (Continued)

Weapon system/end item	Phase			
	Initial	Alpha	Bravo	Charlie
M603A	U	U	U	U
M901A/ITV			U	U
M981/FISTV			U	U
MH-60L				U
MLRS		U, C	U, C	U, C
MSE	U	U	U	U
MSM-105	U	U		
OH-6	U	U	U	U
OH-58C	U, C	U, C	U, C	U, C
OH-58D	U, C	U, C	U, C	U, C
Other equipment	U, C	U, C	U, C	U, C
OV-1D	C	C	C	C
Patriot	U	U	U	U
QUICKFIX		C		
Rotary aircraft	U	U	U	U
RC-12D	C	C	C	C
RV-1D	C	C	C	C
T700 engines	U	U	U	U
Tactical vehicles	C	C	C	C
TADS/PNVS	U	U	U	U
TOW		U, C	U	U
TOW2		U	U	U
TOW-SE		U	U	U
Toyota 4x4s		F		
TRITAC		U	U	U
UH-1	U	U	U	U
UH-1H	C	C	U, C	U, C

Notes: C = Department of the Army Civilians, F = foreign contractors, and U = U.S. contractors

TABLE F-1

WEAPON SYSTEMS AND END ITEMS SUPPORTED BY PHASE (Continued)

Weapon system/end item	Phase			
	Initial	Alpha	Bravo	Charlie
UH-58	U	U	U	U
UH-60	U, C	U, C	U, C	U, C
UH-60/L	U	U	U	U
UN-1		U	U	U
UN-60		U	U	U
URC-101/110		U	U	U

Notes. C = Department of the Army Civilians; F = foreign contractors, and U = U S contractors

APPENDIX G
OBSERVATIONS

OBSERVATIONS

During the course of our research and interviews, we were exposed to a voluminous amount of documentation and other information that led us to some observations concerning employment of contractors and Department of the Army Civilians (DACs) during the operations, which, while peripheral to our central efforts, are presented here as a byproduct of the study. They are presented because ignoring these observations, would be a disservice to the study recipients.

- Contractors performed an essential and vital role in the theater. Given the downsizing of the Military Services, the fact that a number of systems were fully contractor supported [e.g., mobile subscriber equipment (MSE)], and the nonavailability of trained military technicians with all the skills to accommodate all the maintenance requirements, there was no viable option other than to use contractors to supplement the "green-suit" maintenance. Thus, the contractors' presence was all the more essential. Civilian support was viewed as very helpful at all levels. Many contractors in Southwest Asia were ex-military personnel (our research indicates that more than 65 percent were former military personnel, a potentially significant point relating to contractor experience). They brought expertise and knowledge about the job they were contracted to perform and how the Army operates.
- Contractors were brought in to the Gulf early to fill a military logistics support void occasioned by the strength ceilings placed on U.S. Central Command and the need and desire of senior Army leadership to quickly maximize the combat power on the ground to counter the threat of invasion by Iraqi forces. The contractors provided flexibility and skills on short notice, minimizing the burden on the Army. Most high-tech maintenance contractors in SWA provided the Army with the same or very similar support as during peacetime.
- The host nation, Saudi Arabia, and other Coalition forces provided transportation, water, food, fuel, and support personnel – reducing the demands on U.S. Military resources. Some of that support was contracted for by, or through, the host nation. One should acknowledge that the deep involvement of the host nation was in some ways a unique situation; one should not assume that such support will occur (to the degree it did, if at all) in future conflicts.
- The infrastructure of the host nation affects, if not dictates, the type and scope of contractor and DAC support needed.

- In a number of ways, the sparse Saudi Arabian environment faced by the U.S. Forces dictated the need for more extensive use of contractors to fill the void created by the nonavailability of an existing logistical support infrastructure.
- When using contractors and DACs, flexibility is essential. That is, the Army must be organized to rapidly deploy, employ, expand, contract for, change missions for, and terminate the use of these resources. However, a clear definition of what is needed is also required. For example, for the maintenance function, the following questions should be answered: What level of maintenance is required? Where is it needed and for how long? How many people will be required? What parts, tools, and test equipment will be needed? What life support will be provided for personnel? What is the need for health standards; rotation policy; command, control, and communications; and transportation?
- There was some concern about having units provide life support to U.S. contractor personnel. During the initial deployment, that was a problem. However, as the theater matured (and depending on the particular location involved) it became less of a problem.
- The further forward one goes on the battlefield in SWA, the fewer contractors were found. Only a very few contractors were assigned with the divisions and few were assigned in the Corps Support Commands (COSCOMs). Most contractors were at echelons above Corps and at the permanent installations such as ports, airfields, and facilities in metropolitan areas. However, a number of contractors traveled all around as mobile maintenance teams and other specialty teams.
- The consensus of most of the respondents was that there is a role for contractors and DACs on the battlefield, but it is mostly at echelons above corps. That role needs to be more fully defined in applicable Army policy and procedure.
- Little evidence exists to support the notion that many contractors went into Kuwait and Iraq with the attacking forces. Contractors with the divisions were with those that had high-technology weapon systems. While several contractors went forward after the conclusion of the 100-hour ground war, most did not, citing company restrictions against going. That was not the case with the Logistics Assistance Representatives (LARs). Considerable evidence exists to support the claim that assigned LARs did accompany their units and organizations into Iraq and Kuwait.
- There were some logistical mistakes, but many major logistical successes in the Gulf war. Thus, it is difficult to determine causes and effects, including positive results obtained through the use of contractors and DACs. However, it appears that the most important uses of them were for weapon systems maintenance and materiel transportation. Such support was

decidedly a logistics multiplier. Contractors and DACs made a significant contribution to readiness. Participants attribute 5 to 15 percent of achieved readiness directly to the efforts of the contractors and DACs.

- The extraordinary means (i.e., the use of contractors) that were used were successful in part because of the failures of the Army's supply/distribution system to fully respond.
- While contractors were invaluable in obtaining spare parts, their activities circumvented the Army's supply system and helped this system break down. Contractors also provided the in-transit visibility that the Army lacked.
- Some people perceived a lack of clear command and control over contractors. Army units had difficulty determining who had management control over the contractors. Who did they work for, Army Materiel Command Major Subordinate Commands (AMC MSCs)? the in-country senior MSC representative? Army Materiel Command – Southwest Asia? or LAOs? Soldiers, particularly higher level ones, found it difficult to distinguish a LAR from a contractor. On the other hand, those in charge of the contractor effort knew who those contractors were and what they were doing. Our interviewees sensed that the contractors were not aware of the commanders' intent and the political considerations of their efforts.
- The requirements for the use of contractors and DACs must be specified in operational and contingency plans.
- For the most part, civilians (contractors and LARs) were not in good physical shape that was necessary to endure the rigors of the battlefield. However, contractor participants indicated that, overall, they withstood the stress of battle preparation and battle quite well. What they lacked in physical stamina, they made up for in dedication. Many were ex-military members who wanted to be involved in the action.
- It is questionable whether the civilians would have remained when the bullets started flying. There were a few instances of contractors/DACs wanting to leave the theater because of the dangers of war. However, many people have doubts about how long they would have stayed if the operation had become costly in lives.
- One of the more valuable roles that the contractors played was in getting spare parts from their sources. What happens when the contractors do not have parts contracts with the Army, but instead with the Defense Logistics Agency (DLA)? What happens when more and more maintenance and supply contractors come under the control of DLA?
- Many maintenance tasks were performed in the theater by civilian contractors or LARs that have or could – have been performed by soldiers. A number of Army leaders feel that if soldiers are given the required amount

of training, they can do anything contractors can do and that soldiers are preferred. Contractors performed depot-level missions that were within the capabilities of direct support/general support mechanics. However, this mix of maintainers was situational at best. It would be folly to believe that such a mix would fit all scenarios in which the Army could find itself participating. The Army would be remiss in designing future contractor support doctrine purely on the basis of the experiences in Operation Desert Shield/Storm.

- As in the case of the CONUS/Europe-based Army that supported the effort, all contractor support of the effort is not just limited to efforts in the theater. In a number of instances, support personnel, operations, and facilities in CONUS were dedicated to support the contractor effort in the theater — sometimes at an added cost to the Army.
- Plans for DACs to accompany the forces into the theater either did not exist or were sketchy at best. Therefore, DACs were not included in the plans for transportation assets, communications assets, and so forth. This became a real shortfall for DACs whose missions were mobile in nature. While contractors fall under the same set of circumstances, they had the ability to compete on the open market for vehicles, space, and so forth.
- The language barrier between soldiers and non-U.S. contractors is a general problem. If the Army is going to rely heavily on host nation contractors, people with the appropriate language skills must be made available.
- In the future, as we fight "come as you are" wars with an uncertain industrial base and high-tech weapon systems, greater use of contractors and DACs will be required.

Contractors have accompanied U.S. Forces into battle since the Revolutionary War; therefore, a strong precedence for their presence and use exists. There is a role for the contractor on the battlefield, particularly when the skills needed are not available in the Army, either active or reserve, or where the tasks are so complex that it is not economically beneficial for the Army to maintain the needed capability within the force.

We believe that contractors should be a supplement to the logistics force structure, used judiciously where applicable, but should not be a replacement force. The Army must come to grips (doctrinally) with the role that it wants its contractors to play; then it must develop supporting policy and procedures. As one interview respondent mused, "After all, would you hire out your infantry?"

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13. ABSTRACT (Maximum 200 words)

This report identifies U.S. and major foreign contractors who supported U.S. Army Forces in the Persian Gulf Theater of Operations during Operations Desert Shield and Desert Storm. It identifies where they were in the theater, what type of support they provided, and when they provided it, by phase. It also provides similar information about the Department of the Army civilians who served in the theater of operations. To the extent that the information was available, information as to effectiveness and costs of contractor support is included.

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